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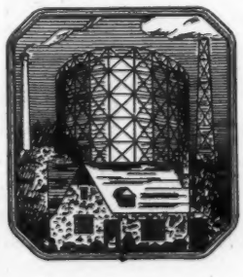

VOLUME 140
NUMBER 4

WHOLE
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LOW-COST MAINTENANCE IS WHAT COUNTS

A reckoning that looks at the cost of installation alone and not at the cost of maintenance is not a true gage of pipe-line investment. How much will it cost to keep the system going year after year?—that is the important question. The answer depends largely on the pipe that is used.

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Editorials

This Too Shall Pass

WHAT with agitation relative to rates, taxes, etc., many gas men, especially the younger element, might well suppose that the gas industry is entering an impenetrable thicket, with clear and care-free going far ahead. However, this is far from the true status. Search back—say to the sixties, when the plans of Lee for an invasion of the North were being worked out, and the country in general was rife with bedevilment somewhat in excess of that which now prevails—and you will find that our industry was subjected to a raking fire of taxation and, later, to the other ills which now muster their forces to plague it. And somehow or other it survived and managed to make progress.

Perhaps, as some zealous souls will aver, the men who ran the affairs of gas companies up the years from the earliest times were, as has been said here of late about the men running other businesses, not real business men after all and somehow or other, possibly by the Grace of God, contrived to hobble along. If this is the case, then it is up to all of us to cross our fingers and wish strenuously for a continuation of such key men who will have the ability to flop down on their knees and pray for a never-ending stream of this Grace with as much success as attended similar efforts on the part of gas managers in the days agone.

The cussed aspect of many of us Americans is that we take a sort of inquisitorial delight in damning the whole parcel of folks in a given business once they discover that a few individuals have strayed from the fold. And no gas man who has a fairly well rounded out acquaintance with the industry will be so bold as to clarion that it has not unfortunately produced a handful of such misguided individuals—such contention would smack of a piety not vouchsafed to mortals in our or any other business. But, in passing, it is well to observe that the backsliders have rightly been kicked in the seat of the pants and will continue to merit such handling in the future—and will get it.

As we observed in a previous issue, no company which is operating properly need have any fear for the future. And those that are acting in an opposite manner should be entitled to no sympathy, because they are the ones that engender the aforesaid general, all-around damning. Further, even if we did our job with Utopian efficiency, there would be those afflicted with grievous liver ailments who would exert themselves no end to throw a wrench into the works and clamor for a change.

In any legislation that might impend we believe every gas company will seize upon those suggestions which promise better service to their customers, but, as regards unwarranted regulation and crazy-quilt changes, if past history is any criterion, these too shall pass.

Since Eighteen-Fifty-Nine

ERE many more days have passed AMERICAN GAS JOURNAL will have completed seventy-five years of continuous service to the American Gas Industry. Possibly we might be pardoned in throwing a few plaudits at ourselves for such a record. However, roses cast at one's self usually don't have quite as fragrant an odor on the return as when they left one's hands. Hence, we promise no bouquet heaving.

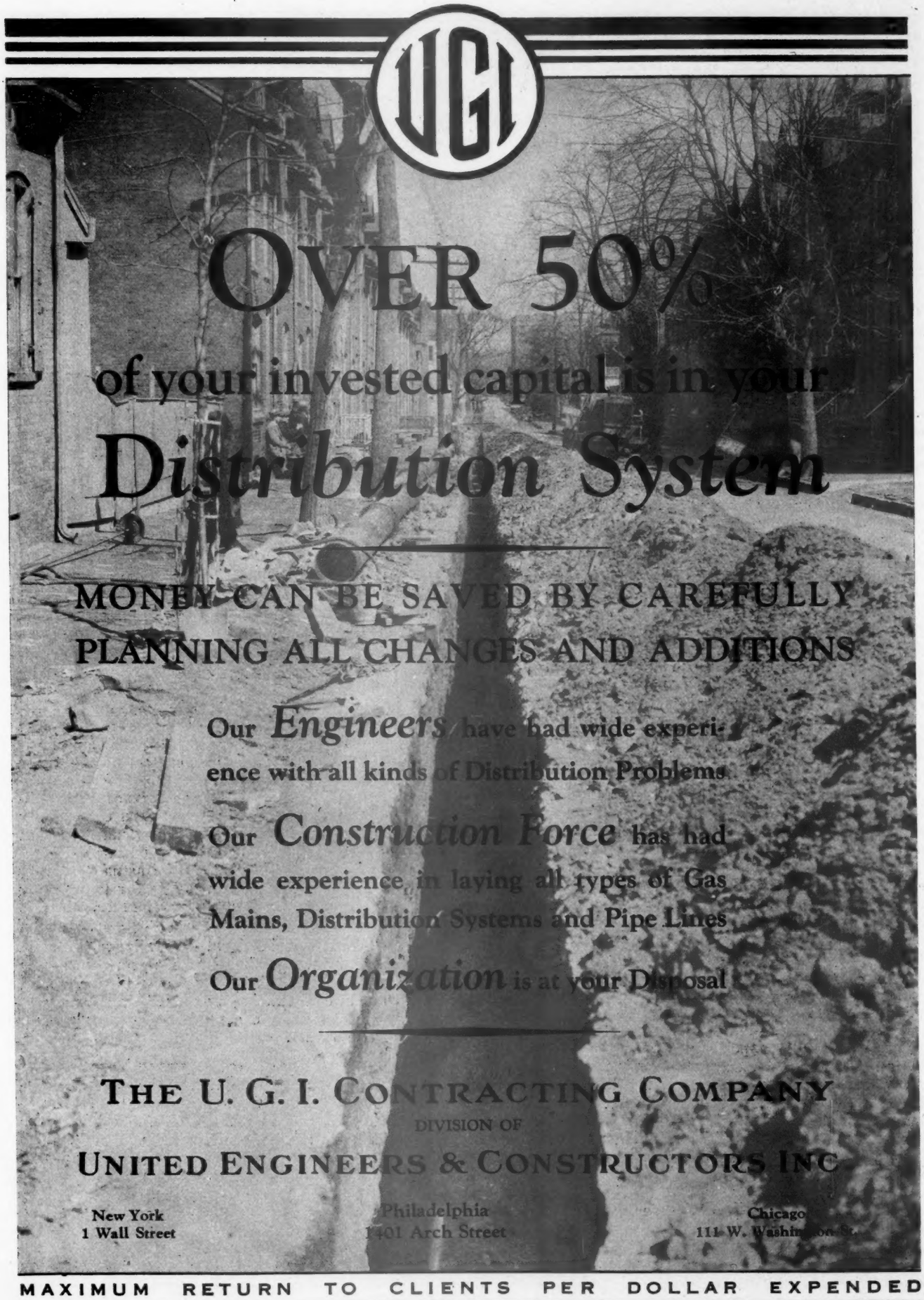
Nevertheless, some nosegays might well be tossed in one or two directions. We refer to the subscribers who have—sometimes patiently—borne with us and overlooked our very human shortcomings. Something to be thankful for, surely. Also, we are thinking of our advertisers who have made possible the publication. The very mention of their long roster of names reads like a saga of the gas industry's success. Finally, regardless of how the tides of business have surged against us—and we too have experienced more than one business depression—always those in control of the paper turned a deaf ear to flattering offers looking to a combination with other papers or other groups of trade publications. By and large, we have retained our identity as a relatively small but flexible business unit, one that has ever hewed to the line of acknowledging that success can only be merited by reason of actually serving the industry that has made it possible for us to carry on for three-quarters of a century. Here, also, is reason for plaudits.

Our May issue will be devoted to a human interest narrative of how the gas industry has grown to titanic proportions since 1859. With the management and staff it will constitute a starting point for another three-quarters of a century and a time for congratulating a really fine and human undertaking, the gas business.

Let's Go!

THIS fall, at the A. G. A. Convention, exhibits of equipment and appliances will give an old-time tang to the proceedings. If at all financially feasible, all and sundry manufacturers should plan to display their wares at this meeting. If you cannot take big space aim to take small space, but, by all means, show your stuff.

HENRY M. RILEY,
Editor.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AMERICAN GAS JOURNAL
April
1934

Showmanship in Selling Hot Water Service

In Selling Automatic Gas Water Heaters There Is Abundant Opportunity for Dramatizing This Appliance—and Ample Business Will Result from Such a Procedure

By **E. D. BREWER**
Ruud Mfg. Co., Atlanta, Ga.

A window trim by Ray Martin of New York Consolidated which exemplifies dignified showmanship

IN developing appreciation and sales of automatic hot water service it is necessary to put on a 24 hour show for 365 days of the year. Even then, perhaps, the good old Saturday night bath is the extreme limit to which a large percentage of the people can be pushed. The home is the greatest of all markets for automatic hot water service, but it is not the only market; many other sales opportunities exist. The showmen and the show-women engaged in this work should be all the men and women on the pay rolls of the Public Utilities and the Appliance Dealers who are engaged in furthering the sale of automatic hot water service, and all the employees of the manufacturers of water heaters, including, of course, the manufacturers themselves. First, the show plan should be well-written in a broad and inclusive manner, based on the experience of the industry in serving the public and a keen desire, right from the heart, to render a better and fuller service.

The plan of the show should have plenty of common sense in it, and should be simple and reasonable, and full of human interest, and human kindness, and include the principle that we laugh a little as we go along in order to get more worthwhile work done.

Discussion of the paper, "Developing Appreciation and Sales of Automatic Hot Water Service," read before Southern Gas Assn. Meeting, Mar. 21, 1934, Memphis, Tenn.

The plan should include as a Director a man trained in merchandising or selling; a man who regards himself and his associates in business as a public service of supply and is eager that good service be rendered honestly and acceptably; a man good at directing the work of others; a man who realizes that a little praise goes a long way, that those working under his direction should be assured of a good steady income, sufficient to encourage them to remain interested in their work, and looking hopefully and steadily to the future. The plan should include brushing up the service to present users of hot water service, and selling the idea of hot water service to those who do not use gas, and to those who use non-automatic tank heaters, but can afford automatic hot water service.

Everybody needs hot water, and surveys will show what can reasonably be expected of any community, and the set-up will show the market. All prospects should be referred to the right kind of a salesman who will go over the ground and sell the prospect what he or she ought to have in order to get good automatic hot water service, and be able to afford the service.

All Need Hot Water

Everybody needs hot water, and those who deal in water heaters should have a management that regards its mission as a continuous selling function, and insists upon having salesmen who are properly trained and compensated to keep them on their toes to do a good job.

To develop appreciation and sales of automatic hot water service extreme care should be exercised in the selection of water heaters to be offered for sale. Only quality water heaters that will give the customer good service at a reasonable operating cost should be selected. Too, it is well to select a line of water heaters that will require a minimum amount of service from the crew known as "trouble shooters." Selling quality goods might be called Trouble-Preventive Merchandising, and especially is this true when the men of the installation department deliver and connect up the water heater correctly.

In servicing work, experience clearly points the way to the wisdom of having only men who know water heaters attend to complaints on such appliances. Inexperienced workers cause the customer to complain like this: "My, goodness, four different men from the Gas Company and none of them has eliminated the trouble!"

All of the officials and employees of the Utility and Dealer should be introduced to the automatic gas water heater, and should witness a knock-down demonstration; should at least use one in their home or become familiar with its use at the Show Room.

There should be a modern exhibit of a modern automatic gas water heater connected up ready for use in the show room. Here, anyone interested, may plainly see just the type of service rendered. Here, every employee can see how it works, can learn all about it, and be prepared to talk intelligently and interestingly about it to all friends and neighbors.

Officials should encourage employees to invite their friends and neighbors to come to the Show Room and see the heater demonstrated. General employees should turn over their prospects to Automatic Hot Water Service Salesmen to call on homes of friends and neighbors and see them in their homes and there select the right type and size of heater and close the sale.

Automatic Gas Water Heaters should be neatly and attractively displayed in a well-lighted show room, and the show room should be kept spic and span. There should be a spacious show window for the exhibit of water heaters in seasonable trim, and this window should be kept scrupulously neat.

Dramatizing Human Events

Nearly every day of the year is the anniversary of some important event, and human beings are interested in human events. Utilities and dealers can utilize the show window to display a water heater, and a nifty card calling attention to the important happenings of the day in history. James T. White & Co., Publishers, New York City, publish a Derby Calendar of American history, giving the important event of every day of the year. Similar books can be referred to at your public library.

The newspapers should be used continuously to carry stories of automatic hot water service, and the entire organization of the Utility and the Dealer should be required to read the advertising of automatic gas water heaters whether the ads are in the newspapers or street cars. Employees should be requested to listen in when the radio is used to tell the story.

The newspaper ads should advocate the hot bath as an H_2O pick-me-up; the bath for refreshment, taken before supper—it will aid digestion. Hot water should be known as one of the things that make women more beautiful. The hair should be shampooed with hot water; many women already know that the hair has a prettier gloss when rinsed in hot water, and a picture in the paper of a pretty girl with glossy hair helps tell the story.

Every woman should know that there is a job in her house to wash a pile of dishes over the years, a pile high as Al Smith's Building, and that hot water makes the job easy, that is, automatic hot water.

The hot bath should be sold first for beauty, second for cleanliness, and third for health.

The mark-up on automatic gas water heaters should be no higher than is reasonable.

To develop appreciation and sales of automatic gas water heaters and automatic hot water service, good showmanship is a great help, and a good showman is one who exhibits in a usual, again in an unusual, and still again in an unheard-of manner.

Service Men Win Race

AN inspiring example of the heroic efforts made by employees in Customers Service Division, Brooklyn Union Gas Company, to maintain service at all costs despite blizzards and extremely cold days was furnished by Thomas J. Perry, Superintendent of the division, when he told of steps taken to restore service in the Duryea Presbyterian Church at Underhill Avenue and Sterling Place.

On March 2, the Shop Section of Mr. Perry's division received word that the church was without gas, due to a frozen service, and that a dinner for 100 persons was to be held in the church that evening. Men were rushed to the scene at once, equipped with a "steamer" to thaw out the line.

Work with the "steamer" soon revealed, however, that this method would prove unsuccessful. A street gang was then despatched to the church, with instructions to open the street so a new service could be laid. This was done but before the work could be finished it was time to begin preparation of the meal. To meet the emergency, the "steamer" crew then disconnected their tanks of compressed gas, attached them to the ranges in the church's kitchen and made the necessary burner adjustments. Using the "bottled" gas, the cooks prepared the meal.

The work of the employees was warmly praised by the pastor in the course of a talk he gave at the dinner that evening.

Satisfying The Customer

The Home Service Department Offers a Fine Means for Ascertaining Your Customers' Viewpoint, Rectifying Mistakes and Building Good-Will

Survey calls are an excellent means of determining customer attitude toward company policies and services.

By HULDA UNGERICHT
Home Service Director,
The Ohio Fuel Gas Company, Columbus

BEFORE attempting to discuss how to satisfy the gas customer we should have an understanding of what the customer expects. Whatever this may be, if we fall short of expectations, we are dealing with a disgruntled customer. If we meet the expected standards, the service soon becomes commonplace and she merely accepts it. But if we can exceed her expectations, and make her realize it, surely we have a satisfied customer.

Read before 11th Annual A. G. A. Distribution Conference, April 9-10, 1934, Detroit, Mich.

In a way, it is unfortunate that gas can not be sold over the counter as other merchandise, for then each sale of gas could be dealt with as the conditions require. Consequently, we must carry this contact to the customer, relying on the ability, knowledge and personality of the comparatively few gas company employes to deploy itself among our thousands of customers.

Your company has its own policies regarding the maintenance of service, work on the customers' premises, meter reading, bill collecting, new accounts and appliance sales. But do you have a method of knowing whether or not your policy is "clicking" with the public and whether or not the efforts of your departments are coordinated, even to *meet* the customer's expectations?

There is a way of finding this out and rendering a high degree of satisfaction while you are doing it. I am referring to the use of the Home Service Department, if full opportunity is taken to direct its efforts along the proper channels.

What are the qualifications of the girl who is to do this job? She should be a home economics graduate as her background to deal with the many food and household problems that will confront her. She should be even tempered and a master at diplomacy. The home service girl should have some ability to speak publicly before gatherings of people. She should be neat and wholesomely attractive. She must have these qualifications when she comes to you, and it is far from a large number who are able to meet them. Her job in home service work then must be taught to her by the gas company.

One or more executives of the company give her an over-all picture of how it operates, how the departments coordinate, the problems of the company and what it is doing to solve them. She then visits the different departments, especially those that are concerned directly with the various phases of customer contact. She is taught to locate trouble, to diagnose it and to either remedy it or report it to the proper department for correction. Departmental codes and company literature which may prove helpful are read. As the climax to her training she spends several weeks in company with another home service girl to obtain "front line" experience. Now she is ready to do her part in helping to satisfy the customer. Where should she start?

Unless you are operating a new company, your "bread and butter" consists of old customers whom you already are serving, and a reasonable amount of effort first should be devoted to them to bring about customer satisfaction. By this I don't wish to infer that new accounts should be ignored, but rather that new territories should not be developed until

you are giving a fair degree of satisfaction in the ones now served.

Mrs. Smith, out on Main Street, has used gas service for a number of years. She never has complained so the company has assumed, maybe erroneously, that she is satisfied. One day she receives a gas bill that is higher than those she remembers paying recently, and she immediately decides that something is wrong. She writes, phones or comes in to the company office to register her complaint. If she chooses the latter course, perhaps your complaint department can justify the bill to her satisfaction but, if not, you have done all that she actually expects you to do.

Home Service Enters The Picture

It is now the company's turn to go to her—something she hardly expected—and the gesture, itself, will go part way toward giving her satisfaction. The home service girl comes into the picture and, in making her call, she is accepted as woman to woman. In her conversation with the customer she directs the discussion in such a way as to find out the regular uses which the family makes of gas. She inquires of any deviations in household routine that may have brought about the increased consumption.

Perhaps she finds an appliance or two out of adjustment and makes the necessary corrections. It may be necessary to shut off every appliance in the home and check the meter for leakage or house lines. And at this time the woman can be instructed in reading her meter and in the accuracy with which it operates. Sometimes an especially inefficient appliance is found that uses an unreasonable amount of gas. Several suggestions covering the economical use of gas might be helpful.

Quite likely the cause of the high bill has been located before it is necessary to follow through all of these steps. The home service girl leaves Mrs. Smith a satisfied customer—at least more satisfied than she was, whether or not she admits it. A potential knocker is turned into a booster. In fact, it is not uncommon for our home service girls, who are recognized partially by the company emblems on their automobiles, to be stopped on the street and asked to come into a home to perform one of the services that were rendered to Mrs. Smith, after hearing about them from her.

It might be well to state here that if anything exceeding a minor adjustment is needed, the home service girl will explain the trouble and offer to notify the service department, for which work there will be a charge. Or she may recommend that a plumber be called.

In our organization, the home service girl follows up all installations of gas ranges, refrigerators and water heaters within a week or two after they are made. I understand that some companies make it a practice, also, to follow up the sale of these appliances made by other dealers.

Mrs. Johnson has had her Electrolux Gas Refrigerator several days when the home service girl calls. She inquires whether or not its operation is satisfactory, and offers some suggestions which will benefit the new owner in using it. Mrs. Johnson is instructed in defrosting it, keeping the screen clean and lighting it, should the flame be blown out. The good features of the refrigerator are re-emphasized. Good placement in the cabinet and the freezing of desserts are explained. A booklet of menus employing the use of the refrigerator is left with Mrs. Johnson before the home service girl departs—and it is not uncommon for the girl to have on her note pad the name of a friend of this new owner, who also is interested in an Electrolux.

But suppose that all has not gone so well on the call and Mrs. Johnson says that the salesman who sold it to her fell down on some of his promises and that he is not nearly as interested in the sale since she bought as he was before. She might compensate some by commenting on the courtesy of the service man who installed it, and say that he was very careful not to tear up her kitchen or scuff the woodwork.

Messages Carried Back

Here are two messages that are carried back to the company—a praise to one department so that a good practice can be continued, and a complaint to another department so that a fault can be corrected. Both suggestions will work to the satisfaction of the customer. I will discuss later the details of carrying back such information to the departments concerned.

A call is made upon Mrs. Brown in regards to her gas range. This visit can be the follow-up of a new installation or of a service call. The home service girl finds that the owner is experiencing difficulty in baking. It may be that the woman does not understand the oven heat charts or the proper placing of pans. Perhaps the thermostat or flame is out of adjustment. Sometimes it is a case of that custard pie just not baking properly.

After checking the range for correct adjustment, it may be advisable to slip on an apron and make a custard pie for the woman. The home service girl is experienced in this work and if her pie comes out all right the trouble likely can be found in the method that Mrs. Brown uses. If the pie is a failure, more attention must be given to the range—perhaps another inspection by the service department or even by the factory representative.

Opportunity for Suggestions

After handling the baking complaint, the home service girl is free to make other suggestions that may aid Mrs. Brown in using her range and in appreciating the value of gas. Instruction can be given on the time-saving element of oven dinners. She can point out oven canning as a means of lessening labor during the canning season. Few women are familiar with the means of using wasted oven space and heat. Mrs. Brown will be glad to know that prunes and other every-day dishes can be cooked in the oven at the same time that the meat is roasting. She will appreciate suggestions for making greater use of the broiler. Several sheets of new recipes are given to her. When the home service girl leaves, Mrs. Brown is more satisfied—is a better gas customer.

To capitalize fully on follow up calls, a complete record is kept of them. It is a good plan to send a letter to each customer to whom service has been rendered. The customer is asked to check an enclosed, stamped, return card as to whether or not the service was satisfactory. She then signs it and mails it back to the company. Experience shows that a large portion of the cards are returned, but those that do not come back are followed up by the home service girl. In this manner almost 100 per cent service can be rendered because any mistakes can be corrected.

Why is one customer-contact employe better at his job than another? You may judge the work of your employes, but isn't it worth more to know what the customer thinks of it if we are to give satisfaction?

Is the delinquent customer given courteous treatment by your collector? Does he impress the customer with the fairness of the company's position and leave the customer as friendly as possible, even though it may be necessary to make a turn off?

Are your salesmen using fair

means of gaining entrance to your customers' homes? Do their selling methods reflect credit to the company? Is the service man doing what the customer expects—and more—in order to give satisfaction? Are the complaints justified that have been lodged against a certain meter reader or bill passer?

Finding Complaint Causes

An occasional check up of such calls by the home service girl will give you this information. She visits random customers whose names are taken from the daily route sheets of these employes. There need be no apology for such work because it uncovers just as many good practices as it does bad. If such information is conveyed back to the employes properly there need be no suspicion or fear of the home service girl, but rather a building up of a sense of pride in the department's work which no employe will want to impair. How is this done?

The manager arranges meetings at frequent intervals with these departments that contact the customers. The home service girl is given opportunity to explain the things that she has found the customer expects when a representative of the gas company calls to perform a service in her home. For example, the installation men are instructed on leaving the room in the customer's home in the same orderly condition in which they found it. The housewife will appreciate simple instructions on the appliance that will enable her to use it properly until the home service girl calls. These meetings are pleasant and helpful because such practices that deserve praise are discussed with the same emphasis as those that tend to cause dissatisfaction.

It is profitable to use the home service girl occasionally to make regular customer surveys. Several complaints on pressure reach you from one neighborhood. Are these isolated cases or is the condition general in that vicinity? A spot survey among the homes will give you the answer.

There is a difference between the city and the company over the matter of rates. What is the actual customer sentiment? Where are the customers that you can count upon for support? Again, a spot survey puts your finger on the pulse of the situation. In many cases the home service girl goes a long way toward changing customer attitude where it may be hostile. We settled a rate in one town by bringing in the survey cards and showing the councilmen just what the customers had said.

What help can the home service girl give in bringing gas service to a community? An interesting project was carried out in one of our towns where the members of the Chamber of Commerce were soliciting the people to get signers for gas. The men were unable to answer the many questions about natural gas and its advantages. A home service girl accompanied each man for one day until the entire town was canvassed. The results as follows have proved the value of this work:

A total of 168 signers were obtained and, in three weeks from the time gas was turned on, 102 customers were using gas. In another town where these calls were not made until the gas had been turned on, there were 175 signers with 80 users in the same period of time. The difference in percentage 60-46 or 14 per cent is sufficient to show the results of these Home Calls. A check-back in new towns which have been contacted as discussed, shows fewer high bill or service complaints than in the other towns.

Many customers can be reached by lectures given to school children of High School age. The film, Nature's Perfect Fuel, is shown to High School Assemblies to emphasize certain points, comments are added; demonstration gas meters are used to explain the operation of a gas meter and the reading of it to Science Classes; to Home Economics Classes we give lectures on the Gas Range — burner adjustment — and food preservation, bringing in the advantages of automatic refrigeration. A very interesting lecture is given on Gas Service, using for demonstration purposes a piece of gas main, curb box, service line and gas meter. In all cases we try to leave with the students the steps necessary in bringing gas to their homes. These children carry this information home to their parents for on a number of occasions parents have said when the home service girl calls in their home, "My son said you were at school and he showed me how to read our meter"; another woman said, "After you were in school my daughter fixed the burners on my range so they don't smoke any more."

Public Demonstrations

Other means by which the home service work extends itself are through lectures and demonstrations to Parent-Teacher Associations and Womens' Clubs. Also, we are increasing the number of gas company cooking schools, conducted by the home service girls. A weekly recipe service is now looked forward to by several thousand customers.

Regular contact is made with the newspapers in the territory served by the gas company. Newspaper material pertaining to food and household problems, in both printed and mat form, is furnished to the papers. It is gas propaganda in no sense of the word and is well received by the publishers. It appears under a special column head carrying the picture and name of the home service girl in that district. This is material for which the publisher ordinarily would pay. The gas company is compensated in three ways. The greatest benefit is the contact, itself, which offers the publisher opportunity to ask any questions he may have relative to the gas company. Many troublesome newspaper situations have been cleared up by the home service girl being able to give satisfactory answers. The second benefit is that the publication of the girl's name and picture identifies her to the community as an authority on food and household subjects. The third benefit is that the articles are of a nature that they promote the use of gas by popularizing certain methods of cooking.

Cost Is Not High

The illustrations which I have used are taken from specific cases that could be multiplied many times to represent a year's work by the Home Service Department. The cost need not be high for this work. In the Columbus Group of gas companies, only seven home service girls and a director are used in contacting 350,000 customers. After considering the numerous ways in which such a department can render satisfaction to the customer, I believe you will agree that a reasonable expenditure for it is returned many fold to the company that uses home service.

This discussion could be carried on at great length but that is not possible at this time. In concluding may I repeat a few statements which are essential in carrying on this program of work to satisfy the customer. Much goes on in a large company which leads a customer to feel that, due to the size of the organization, his one request may not receive much attention. The home service girls report carefully their findings to the superior for whom they are working. He in turn follows through the various departments making sure that service is rendered where it has

(Continued on page 34)

Gas *Is* Interesting

Good Advertising Helps To Make It So—But Optimism Is Needed in Our Copy and Pollyanna Methods Are Out-of-date

By THE COPYWRITER

FUNNY, how you hit on a word that seems common and familiar as last year's hat—no meaning nor style — and then, all of a sudden, there comes a time, like those variable stars the astronomers tell about, when it glows with a white hot light and you look at it with different eyes as if it were brand new and chock full of significance.

Such a word is "interesting." "That advertisement," you say, "is interesting." Sounds almost like a slam, doesn't it? Damned with faint praise is another way of putting it. But have a second thought. Consider what it takes to make anything interesting. And don't confuse it with "attractive." Reader attention is only one of the first elements of good advertising. When you make it interesting, by jingo, you've done something!

Basis For Raving

This month's apparent raving is inspired by the latest crop of gas company advertisements that a kind fate and a few kindly cooperating advertising departments have dropped in the Copy Writer's ever-receptive lap. You can say all you want to about the value of the "outside viewpoint," but it takes a real gas man to develop the right kind of enthusiasm about the gas business and then transmit it to Mr. and Mrs. G. W. Consumer. Some of these ads have the right ring, whether you look at them through the eyes of the general manager or of the general public. Unfortunately, they make the regular run-of-the-mine advertising of the average company (which is still in the majority) look even paler than usual by comparison. Even some of the outstanding copy is not quite typical of the organization it represents. But things are moving in the right direction.

Note to Women--This advertisement is addressed to Men!!
Men... IF YOU WERE OBLIGED TO COOK THREE MEALS EVERY DAY, YOU'D HAVE A RANGE LIKE THIS...
You would want a range that would not require constant oven watching—and so you would have one with a modern, oven heat regulator
You would want quick action - when speed is desirable—and so you would look for the newest models in the new, natural gas ranges
You might even want a range that would do the cooking exactly to specifications even though you were obliged to be away during the hours the meal was cooking—and so you would have one with an automatic clock which would turn on the heat and shut it off when the food was cooked.
You would want the range to be an addition to your attractive kitchen in the way of appearances—and so you would select one of the many attractive models now on sale by local dealers or at the gas company office
You would want a range which would give you years of useful, dependable service—and so you would pick out almost any one of the new natural gas ranges now on the market.
Above all, you would not tolerate an old stove that was ugly, inefficient, and which needed almost constant attention. You would not use one which radiated an insufferable amount of heat in your kitchen on warm days
And of course—you would take advantage of the easy, budgeted payments by which you could bring into your kitchen one of the new, natural gas ranges,
BEAUTIFUL . DURABLE . . DEPENDABLE . ECONOMICAL
SOUTHERN COUNTIES GAS CO.

California Stresses the Man Angle

For instance, just picking at random, here again is the Detroit City Gas Company, which acquired a fine hunch several months ago and has been gradually improving its technique. "Don't Experiment with *His* Food!" says the headline; and if you could see the healthy, satisfied look on the face of the model who posed for the illustration, not to mention the substantial-looking steak that will never know the digestive action of a dyspeptic's pill, you, too, would see a new meaning in the word "experiment." In this case, it means taking a chance on new fangled cooking fuels in place of gas heat. Here, the copy man has fished out another new word to describe a certain competitive utility, which, in contrast with the speed of gas cooking, he salutes as "sluggish." No guesses as to what he means.

The Map Idea

Then there's our old friend, the Central Hudson Gas & Electric Corporation, which has a novel and effective way of showing public acceptance for gas house-heating as of the winter of 1934. Once more, an old routine developed a fresh significance for somebody whose eye was peeled. It is nothing more than the old map of Poughkeepsie, which had probably been hanging in the sales manager's office since the franchise was in diapers, reproduced in the newspapers, black pins and all to show when the gas-heating customers live. There are black pins for residential users, and black-and-white pins for commercial. Nor has a smart advertising man neglected to stamp, in good black type, the following instructive "NOTE: This map is necessarily incomplete since

new installations are being added daily." I am told that the company has done the same thing for every other town on its lines.

The Brooklyn Union Gas Company evidently has been reading Stuart Chase, for it adopts the specification method of advertising, though in a more attractive form than Chase would be willing to approve. The advertisement in question begins, "Ask Yourself 8 Questions." These are good enough to quote here as follows:

1. Is my present gas range equipped with automatic temperature control?
2. Is it heavily insulated to keep my kitchen comfortable and to eliminate wasted cooking heat?
3. Does it start and stop automatically, even though I'm miles away?
4. Is it modern in lines and color?
5. Is it designed for ease of operation?
6. Is it easy to keep immaculately clean?
7. Does it have the protection of automatic burner lighting?
8. Is it as good, as quick, and as cheap to operate as any other range?

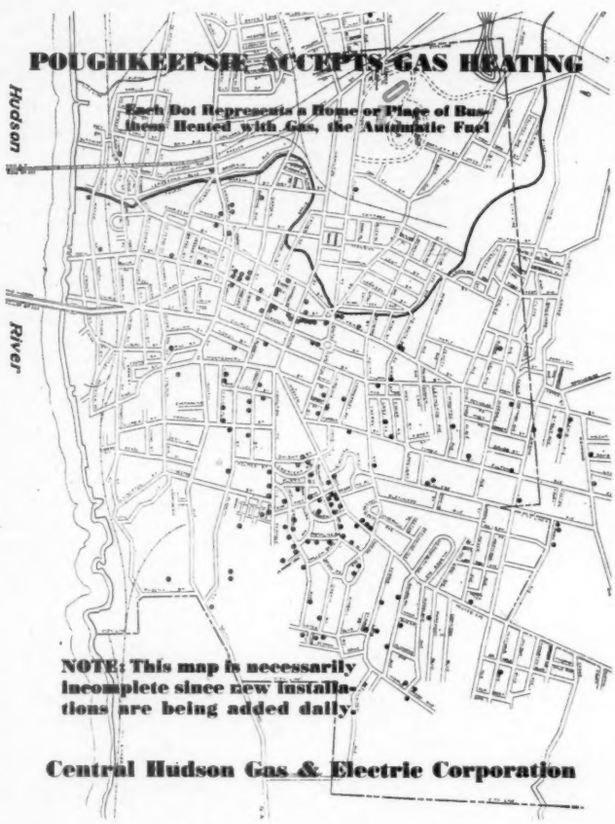
The Bu. U. G. has a good slogan—"Gas the Ultimate Fuel"—though it puzzles me a little to know why they feel it necessary to plug it so prominently twice in the same ad.

There's another stunt about which I can't quite make up my mind. It comes from the Public Service Company of Northern Illinois, and is one of many attemps to combine institutional and promotional advertising in the same piece of copy. This is a question that has been agitating public utility advertising men ever since the famous dictum of B. J. Mullaney, which, if I remember correctly, was to the effect that every good will advertisement should help to sell the company's service, and that every selling advertisement should aim to produce its share of public good will.

Frankly, I don't know. When I first looked at what was apparently a straight merchandising message for gas ranges—brand names and all—and then came up short against a three-paragraph effusion on the accuracy of the meter, I honestly thought it was terrible. It affected me much the same as the advertising of appliances on the back of the monthly bill, which has been outlawed in at least one state (though it is said there are two sides to *that*). I said as much to one of the few men whose opinion in advertising matters I value as much as or more than my own. He said, "I don't agree with you. I think it's fine."

And still I don't know. I can't tell you what's wrong with it, so maybe it's just a difference of opinion concerning the fitness of things, like those differences that start New Deals and World Wars. Some people can't help being tone deaf and color blind.

Having loaded that off my chest,


POUGHKEEPSIE ACCEPTS GAS HEATING
Each Dot Represents a Home or Place of Business Heated with Gas, the Automatic Fuel
Hudson River
NOTE: This map is necessarily incomplete since new installations are being added daily.
Central Hudson Gas & Electric Corporation

Maps Are Ever Intriguing

I want to spread the tidings about what a swell job is being done by the Providence Gas Company since they lost their camera in one of the purifier boxes and hired an artist who has what it takes. The copy man isn't so far behind, either. He believes, like myself, that men as well as women are interested in the modern gas kitchen and that it is worth good advertising space to bring the former into the family. If you think of it, write to them for a copy of the ad entitled, "When Two Fellows Get Together." "Astonishing," says the copy, "how 'kitchen-minded' men have become since the development of today's automatic Gas appliances . . . Men are specially gratified that all this labor-saving convenience can be had with the low operating cost of gas."

Don't say I didn't tell you so.

An excellent companion piece (which shows that originality isn't everything) is the one entitled "Ask Any Woman Who Has An Automatic Gas Kitchen . . . what she thinks of it, and you'll be amazed by her enthusiasm." A good idea—no matter whose.

The fact that men are coming into their own as the sales objectives of gas company advertising is further shown by the Southern Counties Gas Company, which—so there will be no possible, probable shadow of doubt—starts out with a "Note to Women—This advertisement is addressed to Men!!" And it is, too, beginning with this headline: "Men . . . If *You* Were Obliged To Cook Three Meals *Every* Day, You'd Have a Range Like This—" I don't know of any law in California which would prevent a wife from clipping this out and laying it on her husband's breakfast plate.

"HONEST! IT ISN'T SO BAD," says a smiling young lady with her hands in the dish water over the signature of The Union Gas & Electric Company of Cincinnati. I wonder if this doesn't represent a new note in gas publicity. Maybe it was the depression, but it seems to me that most of the gas company advertising during the past few years has been distinguished, more than anything else, perhaps, by an energetic effort to make life appear as difficult as possible. Just as if gas had never been invented! It was "toil-worn fingers at the washboard"; "aching limbs on the cellar stairs"; "blisters on the hand which no shovel was ever made to fit," and a host of similar devices to make people think they were living in the dark ages if they didn't possess this gadget or that. I'm not trying to throw all negative advertising out the window, because it has its place, which is just as important as the other approach. But it did give me a slight thrombosis of the cerebellum after a while.

Now the poor downtrodden worm

(Continued on page 34)

Notes on High Pressure Gas Distribution

Corrugated Expansion Joints Are Preferred in Order to Obviate Strains Leading to Mains Breakage — The Author Outlines the Action of Breaking Strains

By DISTRIBUTION ENGINEER

(Continued from March issue)

Types of Expansion Joints

THE stuffing box type is analogous to a piston free to move in a cylinder, the gas being sealed from the atmosphere by packing held in place by a gland—which description does not include the many varieties of slip couplings whose primary purpose is to join adjacent lengths with a leak proof joint. Experience has indicated that where slip joints are installed at location of considerable longitudinal main movement, leakage results through the gradual loss in the sealing efficiency of the joint. When the slip couplings are installed at intervals of ten to forty feet, the amount of expansion or contraction at any one joint is insufficient to affect the sealing powers for the reason that while there is a slight relative movement between the metal of the coupling and pipe, the expansion and contraction is taken up by the flexibility of the sealing medium, which is usually rubber or a compound with similar physical characteristics, rather than the pipe sliding over the surface of the packing or sealing medium. Therefore, these slip couplings while acting to a limited extent as expansion joints, should not be depended upon or installed specifically for that purpose.

The stuffing box type of expansion joint is unsatisfactory for sub-surface installations as the packing must be changed occasionally and should, therefore, be readily accessible for testing and repair. To repack the joint gas must be shut off and drained from the main or a temporary by-pass installed. These disadvantages would require the installation of the joint in a pit with valves on each side, the total cost of which is not warranted as demonstrated by experience. As stated, the greatest change in temperature of the pipe occurs between the time of construction and the first winter following. This initially greater strain from temperature differentials is decreased by any subsequent work requiring cutting of the line at points where the stress is more or less permanent by allowing a slight movement of the pipe.

Four-inch Corrugated Expansion Joint with Fill-in Rings in each depression

The high cost of expansion and contraction joints may be eliminated in the majority of sub-surface mains as they are merely protection against strains which are easily minimized to a value where the strength of the pipe is ample by proper construction. The majority of the packed type of expansion joints also slightly relieve strains caused by angularity of main at the point of their installation, although any angularity decreases the sealing efficiency of the joint.

The packless type of expansion joint is a corrugated section, usually of a different composition or metal than the main, which provides increased flexibility by the spring action of the corrugations. In addition to their use as expansion joints the corrugated type are used by some companies to relieve strains, especially on larger mains at vertical or horizontal bends. The intensity of stress at a bend from both bending and contraction may result in large total stresses, therefore, making the point of bending the logical point for installation of a joint similar to the corrugated type. The advantages of the corrugated expansion joints are: limiting the possibility of leakage to the flange connections, less need to provide a pit for inspection and repair, and absence of need for valves. Some discussion has arisen as to stress reversals resulting in fatigue of the metal at the bottom and top of corrugations, but the infrequent occurrence of these reversals, their slow action and lack of shock, theoretically indicate that an indefinite life may be expected.

The only other common types of expansion joints are the swivel, and U bends, which, because of the large space required, are impractical for sub-surface structures. They are

usually installed where the change in length encountered is considerably beyond that generally found on subsurface pipe lines. The snaking of pipe in the trench is an adaptation of these types of expansion joints.

Internal Pressure and Wall Thickness

The stress in the metal caused by internal pressures in distribution lines is small and seldom considered, as the pressures are comparatively low. The force causing stress is equal to DP.

D = Internal diameter in inches.
P = Maximum pressure in pounds per square inch gauge.
This force is balanced by an internal stress equal to 2 Ft.
F = Maximum allowable working strength of the metal.
F′ = The unit stress in the metal along 1″ in length and should not exceed the maximum allowable working strength of the metal.
t = Wall thickness in inches.

$$DP = 2\ Ft.$$

$$t = \frac{DP}{2F}$$

When used in this form, F should be the maximum allowable tensile strength of the metal. The resulting thickness would only provide for stresses resulting from internal pressure. The internal pressure is a small factor compared to the other stresses acting in a distribution system and the formula ordinarily used to determine the unit stress is:

$$F' = \frac{DP}{2t}$$

The total required strength of pipe for subsurface mains is the resultant stress caused by all known strains plus a safety factor. The stress resulting from gas pressure causes a tangential or hoop stress which acts at right angles to the more common stress.

In a main the end may be assumed as fixed, although not physically anchored at each end. The internal pressure in a closed vessel tends to expand the vessel diametrically and shorten it longitudinally but longitudinal movement is restrained and balanced by an internal stress acting in the same direction as one produced by contraction. The ratio of pipe diameter to length makes it unnecessary to consider this stress. The tendency to expand the pipe diametrically is prevented by the strength of the pipe metal at the pressures ordinarily carried, the result being a tangential or hoop stress.

The ratio of a tangential or hoop stress to longitudinal stress is known as Poisson's ratio and its value as given in "Commission Des Methodes d'Essai des Materiaux de Construction" is 0.2686. If F′ is the unit tangential stress resulting from internal pressure then the resulting longitudinal unit stress in tension is:

$$L_s = 0.2686 \times F'$$

Assuming two-inch internal diameter, 60 pounds gauge pressure and ¼″ wall thickness the tangential unit stress is:

$$F' = \frac{2 \times 60}{2 \times \frac{1}{4}} = 240 \text{ pounds}$$

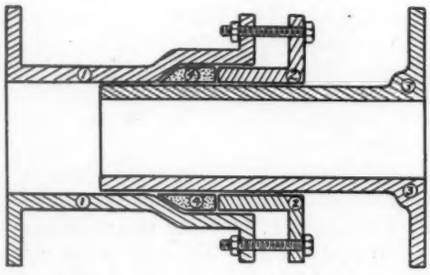
The resulting longitudinal stress in two inch pipe is:

$$L_s = 0.2686 \times 240 = 65 \text{ pounds per square inch.}$$

The small effect of even the excessive distribution pressure of sixty pounds per square inch is evident and, therefore, excluded from most discussions of total stress.

Miscellaneous Causes of Strains

The total of stress caused by expansion and contraction and internal pressure, even under unusually extreme conditions, does not reach the yield point of steel. Considering the ultimate strength steel provides above known stresses, a factor of safety between two and two and one-half is ample under ordinary conditions for steel or other ductile metals. On cast iron the factor of safety should be increased to three or four, due to the comparatively high quantity of breakage.



Expansion Joint—Stuffing Box Type 1—Sleeve or Cylinder, 2—Stuffing Box Gland, 3—Piston, 4—Packing

The safety factor provides for the indeterminate strains to which all sub-surface structures are subject. Judgment must dictate the importance of these indeterminate forces, as local conditions may make them the cause of main failure. Generally, the most important of these indeterminate forces is ground movement. The shifting of the earth's surface, excluding such violent shocks as are caused by earthquakes and volcanos, are due to frost, temperature changes, moisture, decrease in particle sizes with time, causing a swelling and rotting of vegetable matter contained in the soil or placed during filling operations, etc. Movement may be in any direction and not uniform within small areas, but the rate is slow and as a result may change in direction before damaging sub-surface structures. The evidence of its existence is the breaking of buried lines where precise measurements in practically every instance will reveal an angularity between opposite sides of a fracture rather than these sides being parallel. Cast iron mains, having more frequent breaks, provide the best opportunity to observe this condition and further substantiate the theory. The types of cast iron having the least total tensile strength will naturally have the most frequent failures. The frequency of failure for equal sizes of main decreases as the type of metal used increases in ductility, as illustrated by fractures being most frequent in the types mentioned respectively,—sand cast, centrifugally cast and steel. The known strains as previously computed would not result in fractures, yet failure occurs at all stages of main life. While many find that the greatest number of ruptures occur in the first year after burial, following that period there would appear to be no particular age at which they occur most frequently. The fact that fractures do occur at various ages of life indicates the continuous and non-uniform nature of the ground movement.

Result Seldom Satisfactory

Another substantiation of the ground movement theory is that while some companies provide against every possible strain during the construction period to eliminate fractures, the result is seldom one hundred per cent efficient. The reason is that it is assumed all the strains causing failure are caused or produced by construction methods and conditions, and act only in a vertical plane. The provisions made during construction in practically all cases provide only against strains which act in a vertical direction, especially downward, but ground movement may be in any direction.

There are numerous strains which are the result of construction methods. Providing a firm bedding on virgin and not back-filled soil will prevent settling of the main through compacting of the soil underneath. The result of precautions during construction would be evident in a decrease of failures during the first year or two, after which any frac-

tures occurring would be the result of forces unforeseen and unprovided for in the design. Ground movement can not be provided for except as experience indicates the value to be given to the safety factor, as its direction or resulting stress is impossible of prediction.

On streets with heavy traffic, vibration may be felt by those standing nearby or even in adjacent buildings. This distinct evidence of vibration has led to the theory that fracture results from the fatigue of the metal induced by vibration. Tests conducted at various locations have indicated that, relative to the surrounding earth, the main has comparatively no vibration except a slight one on streets traversed by trolleys or trains. This vibration is not a factor in increasing the stress, as it is distributed over a sufficient length of the main so that practically no actual bending or changes in stress occur at any one point of the main. Under city conditions of street car tracks over which local and heavy inter-urban trolleys operate, low pressure services have been found corroded to the extent that the clay soil was all that prevented the gas from escaping to the atmosphere and the remaining metal could be crumpled by the hands. No fractures occurred, indicating a lack of strains from any source. In more loosely packed soils the penetration of the pipe wall by corrosion would have resulted in gas escaping and discovery of the failure.

Corrosion Has Little Effect

An analysis of such failures indicates that only a small minority are fractured by the loss of strength due to corrosion decreasing the pipe wall thickness. A study of conditions surrounding these actual fractures usually produces conclusive evidence that the strain which caused the fracture would have caused failure had there been no decrease in strength of pipe from corrosion, although a greater delay in time would have occurred with non-corroded pipe due to its higher ultimate strength. This example is to further the conception that ground movement had been slight or non-existent during the greater part of pipe life, but, once started, its effect through continuous movement in one direction was the cause of pipe failure.

Superimposed loads are an important cause of fractures where conditions are such that this load on the surface of the highway can be transmitted directly to the main. Valve boxes, curb boxes, drip boxes, loose rock back-filled directly onto the main and other rigid material with sufficient strength to transmit the load from surface to main are the locations of frequent failure of mains or services. These transmitting agents may be located where vehicles or other load producers are not ordinarily supposed to travel—but delivery truck drivers use every ingenuity to ease the task of unloading. Construction methods and careful selection of box locations may obviate fractures from these causes.

Ordinarily any loads on the surface above a main are uniformly distributed over a length of the main, depending on the particular angle of the soil load distribution. This load being distributed acts in the nature of a uniform beam loading on the main and, where a uniform firm base has been provided, will have no effect other than a crushing action, which is negligible in gas distribution pipe sizes.

Torsional Strains Negligible

Torsional strains such as those caused by a twisting of the pipe during construction when using threaded joints, application of wrenches or tongs to move the pipe in the trench, etc., do not ordinarily result in a stress sufficiently high to be considered; but precautions should be used during construction to eliminate these strains.

Bending of the pipe during construction is a particularly bad practice, especially on larger sizes. All angles which would leave an internal stress in the pipe if actually bent should be made by some method which would eliminate a permanent stress. Shaking of the pipe does not usually cause any material stress if properly and inexcessively done.

A common source of stress from bending strains is the difference between alignment of the pipe when welded on top and when lowered in the trench. This strain may result in a high intensity of internal stress, as it would be concentrated at the joint, distribution being minimized by a lack of joint flexibility.

Physical weakening of a line from corrosion, while not producing any strains, would result in an increase in the intensity of the internal stress; but the low value of the stress and the excess strength in mains is demonstrated by the fact that excessive corrosion is seldom accompanied by an increase in the number of failures. This is particularly true where the metals used for mains or services have a high flexibility which allows deformation or bending of the main to relieve the stress.

Residual stresses caused by welding processes are not a vital factor on small mains, but annealing should be resorted to on those having a wall thickness of 5/8" or over and on pipe whose carbon content exceeds American Petroleum Institute Grade A specifications. Stresses from constructure methods are easily minimized and will be more fully explained under construction methods.

Gas Has Place In Honey Production

NATURAL gas has its place in honey production. This is seen in the plant of F. R. Buchanan at Glendale, California, the largest producer of sage honey in the world and among the largest producers of orange honey.

The first use of natural gas noted by the visitor is in heating a large knife which resembles a bolo. This is used to separate the racks and uncap the ends of the cells.

Natural gas thermostatically controlled demonstrates its efficiency and convenience in the bottling room where it provides steam to keep water in the warming tank at an even temperature, in this particular case never above 130 degrees.

Gas again has a place in the Buchanan line-up in the portable warming room used to keep the newly "mined" honey at the proper temperature during the night. Formerly Mr. Buchanan's crew waited until about eleven o'clock in the forenoon before beginning extracting work with the big centrifugal extractors, the reason being that they depended upon the heat of the sun. Now by placing a gas heater just outside the insulated building where the honey is placed in the comb stage and shooting warm air in by means of an old fashioned drum, the products of combustion passing on and out the other side of the building through the pipe resembling a stove-pipe, the honey is kept at bee temperature and extraction work begins early in the morning. Naturally when in the field piped gas is not always available but when operating at the home base it proves itself the most convenient fuel.

A warming pad for use in placing wrappers and stickers on containers also demands the use of natural gas.

Thus in one of the most unique and romantic of occupations profits and production have been speeded up by the use of this fuel. In other words nature's own fuel works hand in hand with nature's own sweet. —*J. Edw. Tufft.*

ELEMENTS OF GAS TECHNOLOGY

Carburetted Water Gas

The Use of Bituminous Coal as Generator Fuel

DURING the past twenty years very important developments have taken place in the methods and apparatus for making carburetted water gas—of these the successful use of soft coal as generator fuel in place of anthracite coal and coke is of prime moment. Due to the relatively low price of soft coal as compared with other generator fuels gas engineers have been attracted to developing methods for its successful utilization; accordingly, as one might suspect, many experiments had been made from time to time to solve this problem. However, up to the year 1917, but little real progress had been achieved. Let us briefly review the features that rendered the problem a difficult one.

We are familiar with the fact that there is less space between packed lumps of soft coal than lumps of hard coal. That is, the soft coal more closely approaches the condition of packed dirt than does hard coal. Obviously, then, this condition has a decided effect on the blast of air for heating up the fuel bed in the generator before introducing steam for making the blue gas with a resultant poor fire. This causes the gas making capacity of the water gas set to decline. In order to obviate this tendency toward a lowered capacity we run into a condition whereby considerable fine pieces of the soft coal are carried over by the blast into the carburetter and superheater whose checker brick thereupon become clogged up. Finally, there is much volatile matter in soft coal and this brings about a too-generous evolution of smoke when blasting, especially when a fresh lot of soft coal has been charged into the generator.

Briefly stated, the reason for a poor fire condition, that is, when soft coal is used in making carburetted water gas, is that when the fuel is charged into the generator there exists an easier path for the blast of air and the subsequent steam to follow immediately next to the wall of the generator than at any other point across a given horizontal section of the fuel bed. In addition to causing easier paths for the air and steam to pursue—channeling, as it is called—with an attendant lowering of the gas making capacity of the set, the degree of intensity with which the fuel bed is acted upon decreases from the generator wall to the center, in some cases being comparatively unaffected at the latter point. The formation of much clinker necessitating too frequent breaking loose—barring down—of the same, with an accompanying loss of time when the set might be making gas, is also an outcome of the above evils.

We will first explain how this poor fire feature was overcome and then show how the other knotty aspects of the problem of using soft coal in the generator were mastered; we refer to smoke and fine particles of coal carried over into the generator and superheater. In clearing up the matter of poor fire elimination, it is of interest to note that this accomplishment followed the old adage, "necessity is the mother of invention."

During war times—1917 and 1918—the government instituted certain restrictions on the use of coke which was diverted to other uses in prosecuting the development of war materials. Out in Illinois, then, it became next to impossible to procure sufficient coke to carry on their process of making water gas. As a result, Murdock, Lungren and Evans invented what is called the Pier Process which solved the major difficulty of the problem of using soft coal as a generator fuel, viz., bad condition of the fuel bed in the generator. These investigators found out that the active portion of any horizontal section of the fuel bed extended toward the center from the walls of the generator only about twenty or so inches. They then reasoned, why not introduce a cylindrical column in the center of the generator and thereby expose a hollow cylinder of fuel bed to the action of the blast of air and the subsequent steam? Clearly, by accurately calculating the diameter of this center cylinder or Pier, as it is called, they saw that they would obtain a resultant horizontal section of fuel bed (the shape of a washer, so to speak) wherein the bed would be made active for a distance of about twenty inches from the walls of the generator toward the center of the generator and a like distance from the surface of the Pier in an opposite direction toward the walls of the generator. As indicated, by correctly sizing the diameter of the Pier, the active points of the fuel bed approaching simultaneously from the surface of the Pier and the walls of the generator would meet and thereby give ideal fire conditions. These inventors' theories were tried out and found highly successful; the fuel bed was rendered uniformly active, channeling was eliminated and the problem of taking care of clinker was greatly simplified.

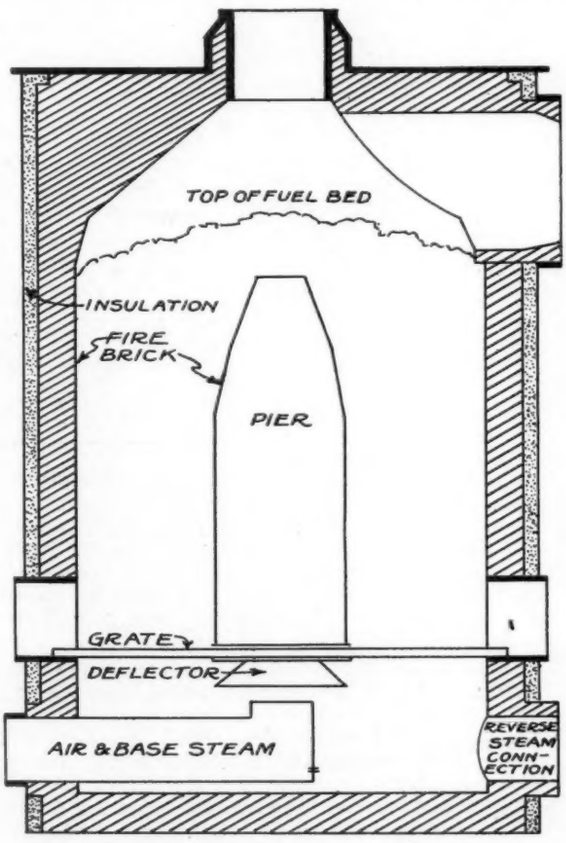


Figure 9—Arrangement for Pier Process

It is noteworthy that the Pier process has opened wide and important vistas for the successful use of soft coal as a generator fuel.

Even with the Pier process considerable fine particles of

coal find their way into the carburetter. Hence, to overcome clogging up of the checker brick, the checker brick are given a wider spacing (larger voids between bricks), or the checker brick are left out of the carburetter entirely. By reason of either of these expedients the fine particles of soft coal drop to the bottom of the carburetter where they can be taken out at regular intervals by use of a hoe-like tool.

The elimination of smoke is accomplished as follows:

Towards the end of the blowing period the supply of blast air to the carburetter is shut off and almost simultaneously the stack valve is closed. By such an arrangement we have a blast of air going through the fuel bed of the generator and accordingly sending into the carburetter a gas which is not burned in the carburetter by reason of the supply of air to the carburetter being closed off. Also, since the stack valve is closed, this gas continues through the carburetter, through the superheater and wash box, and eventually into the plant's relief holder. Of course, this gas is of a low heating value but its subsequent mixture with higher heating value gas made brings the resulting B.t.u. per cubic foot up to the desired point.

At the end of this interval of making a lean gas, which is called the blow-run, the supply of air to the generator is shut off and steam is admitted to the fuel bed and the cycle continues along normal lines. A typical cycle, including the blow-run, is as follows:

Air blown through the generator fuel bed and air supplied to the carburetter for 2¾ minutes, the resulting gases going out the stack valve, either to the air or to a waste heat boiler; a blow-run of ¼ minute, whereby a lean gas is made and with the blast supply to the carburetter discontinued and the stack valved closed, the lean gas goes through the system to the relief holder; regular gas making run of 4 minutes.

Backrun Process

Here again we have a case of where the desirability of using cheaper generator fuel, and in existing water gas sets without greatly altering the same, led to the development of the Backrun process invented by Messrs. Young and Whitwell.

By referring to figure 10 the action and equipment used in the Backrun process will be explained.

We will assume a cycle which the inventors found to be satisfactory, although the process is quite amenable to other cycles. To start with, a blow of 2 minutes was adopted and, during this period, a blast of air was supplied to the carburetter. Then there was an up-run of steam for a period of 2 minutes. Obviously, during this up-run, oil was sprayed into the carburetter. Next there was a blow of 2 minutes with air again fed to the carburetter. Immediately following this was a 2 minute backrun at which time coal was automatically fed into the generator. Lastly there was made a 1 minute up-run, thus completing the cycle.

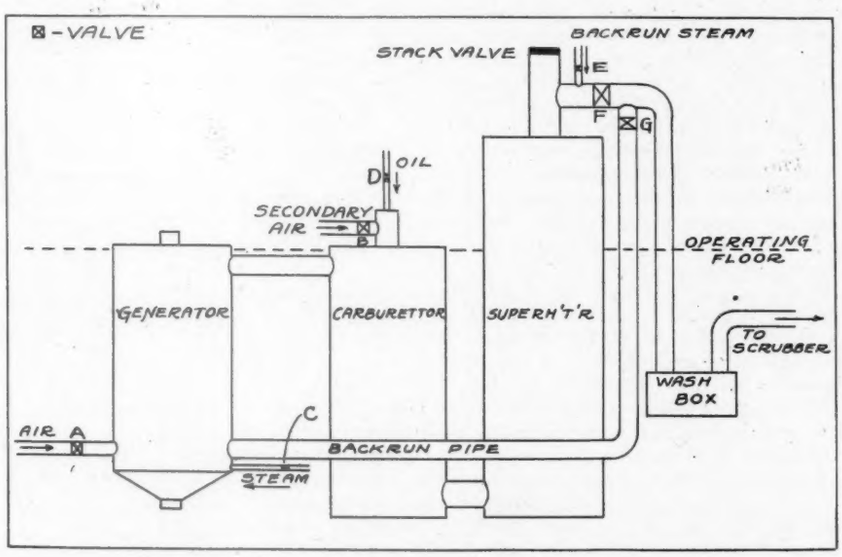


Fig. 10—Water Gas Set Converted for Backrun Operation.

The first two minute blow causes the air to pass up through the generator fuel bed, thence over to the carburetter and down the same to the bottom of the superheater and up the superheater to the stack valve. Meanwhile, secondary air is supplied at the top of the carburetter. In this case the following valves are open: A, B, and Stack Valve. Conversely, the following valves are closed: C, D, E, F, and G.

During the up-run the following valves are open: C, D, and F. Conversely, the following valves are closed: A, B, G, and Stack Valve.

During the second 2 minute blow period the valves are in positions similar to that which obtains in the first 2 minute blow period.

During the back run, backrun steam is admitted at the top of the superheater and passes down through the superheater, thence up through the carburetter and finally, down through the fuel bed of the generator where the blue gases formed make their exit from the generator through the Backrun Pipe and at last into the wash box. During the backrun no oil is fed into the carburetter. The position of the various valves during the backrun is as follows: open, E and G; closed: A, B, C, D, F and Stack Valve.

It is well to observe that before starting the blow, a normal up-run is made with steam through valve C to rid the base of the generator of steam and thereby prevent explosion.

The advantages of the Backrun process are several:

Considerable heat is conserved because the steam that is introduced at the top of the superheater during the backrun picks up a lot of heat and reaches the top of the fuel bed in the generator in a superheated condition with no condensed steam obtaining and, in general, gives rise to lower heats, thereby saving on valves and yielding a higher efficiency; this steam on the backrun reacts with the carbon deposited on the checker brick and keeps them clean; more gas is made from the set in a given unit of time; heavy oils high in sulphur can be used for carburetting; the gas leaving the set being cooler does not demand so much condensing equipment further on in the plant; the use of an automatic charger for introducing fuel into the generator during the backrun permits of the use of smaller and cheaper fuel.

Soft, semi-soft, hard coals and coke or mixtures of the same can be used in the Backrun process.

The process, which has been widely adapted to existing water gas sets, is not economical when producing a quality of gas approaching 600 B.t.u. per cubic foot.

Technical Digest

RECENT DEVELOPMENTS IN COAL CARBONIZATION —PRODUCTION OF "CARBOLUX"

In consequence of the decline of the coking industry in Germany intensive efforts have been made to produce a coke which could be used in place of coal—which could be used as a smokeless domestic fuel A smokeless fuel is now produced—known as "Carbolux"—in horizontal coke ovens of the type that is universally used for the production of high temperature coke.

It is now generally known that smokeless fuel is produced by the carbonization of coal at comparatively low temperatures in order to obtain a physically homogeneous coke with a high percentage of volatile matter and of a low degree of graphitisation. The treatment of coal in coke ovens at these temperatures made it doubtful whether the fuel could be discharged from the chamber without difficulty. The ease with which a chamber can be emptied depends on the degree of shrinkage of the coke, and the resulting clearance between the coke charge and the oven walls.

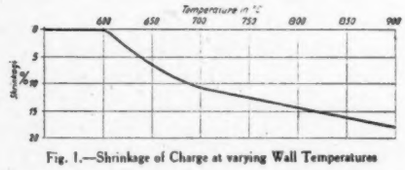


Fig. 1.—Shrinkage of Charge at varying Wall Temperatures

The shrinkage of coal at different temperatures is shown in the graph, Fig. 1. Shrinkage is practically zero up to 600° C., but at 700° C. more than half of the total shrinkage occurring in high temperature carbonization has taken place.

Coal carbonized at 680-720° C. yields a coke which possesses the valuable physical properties of a smokeless domestic fuel, in particular an excellent reactivity, as indicated in Fig. 2. This medium temperature coke is called "Carbolux."

The reactivity is determined by a method developed by Heinrich Koppers, Ltd., at Essen by passing carbon dioxide at a fixed rate of flow over a sample of the fuel crushed to a certain size which is maintained at a temperature of 950°C. According to the reactivity of the fuel, more or less of the carbon dioxide is reduced to carbon monoxide.

The result is expressed in volumes of carbon monoxide produced from 100 volumes carbon dioxide. The maximum theoretical value that can be obtained is 200. The relative reactivity of "Carbolux" with various types of fuels is shown graphically, Fig. 2.

The reactivity of "Carbolux" approaches that of wood charcoal and, irrespective of the type of coal used, gives practically always the same kind of reactivity curve.

Work has been carried on for making a really strong and hard but reactive coke from coal of high volatile matter.

Description of a plant for the production of "Carbolux" is made and this type of plant can also be used for the production of a high temperature coke.

The "Carbolux" process is not characterised by one particular property of the fuel, such as its reactivity, but by the happy combination of a number of desirable properties, never found in a similar combination in any other known fuel. Some of the outstanding features of "Carbolux" are: The absence of smoke when it burns, its low ignition-point, its combustibility, its reactivity and high calorific value, as well as certain physical properties, such as high crushing strength and low friability (trommel index) otherwise only associated with high temperature coke.

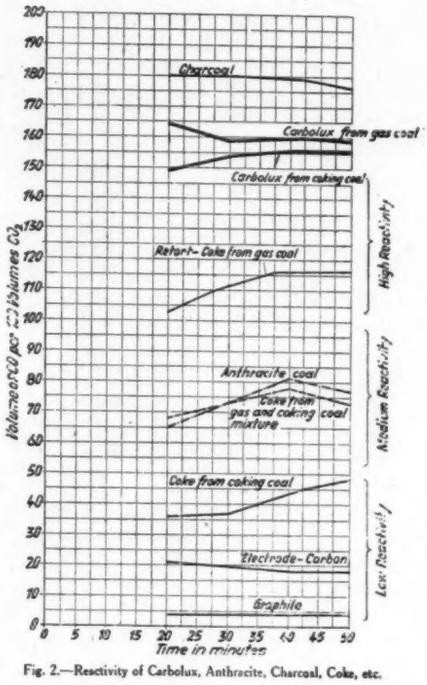


Fig. 2.—Reactivity of Carbolux, Anthracite, Charcoal, Coke, etc.

At the same time "Carbolux" does not suffer on storage and possesses an extremely fine structure consisting of a great number of small pores.

For the purpose of comparison, the following table shows the advantages the properties of "Carbolux" have as a fuel over other coals and coke.

Properties of "Carbolux" Compared with Other Fuels

Type of Fuel		*"Carbolux"*	*High Temperature Coke*	*Lean Coal*	*Brown Coal Briquettes*
Proximate Analysis:					
Moisture	per cent	2	2	2-3	15
Volatile matter	per cent	8-12	1-2	8-12	44
Ash	per cent	9-10	8-9	5-6	20
Net calorific value: B.t.u. per lb.	....	13,000-13,100	12,600-13,100	13,700-14,000	8,600
Physical properties	....	uniform	uniform	stratified	uniform
Color	....	black	silver-grey bright	black	brown
Compression strength, lb. sq. in.	....	2,840	2,560-3,560	850-1,700	1,700-2,140
Trommel Index—					
Above 1½ in.	per cent	86-88	60-86	....	....
Under ⅜ in.	per cent	5	6-8	....	....
Reactivity—					
According to Fig. 2		very high	medium to low	medium	very high
Ignition point	C.	450-460	560-600	440-460	300
Graphitization—					
Ω/m/sq./mm (electrical conductivity)		40×10^6	1,500-2,000	$3,000 \times 10^6$	300×10^6

—H. Koppers, The Gas World, Vol. 99, No. 2574. Coking Section Supplement, pages 8-13 (1933).

THE COLD-WARM DRY PURIFICATION PROCESS

Comparison of the expense of dry purification and liquid purification shows that the total cost including capital charges is smaller in the former case than in the latter if no account is taken of revenue from recovered sulphur. The high working costs of modern liquid purification processes can be partly offset by the selling value of the recovered sulphur, which can readily be obtained in a highly refined condition. Sulphur may also be recovered from spent oxide, though this involves a cost. The result is that the net cost of liquid purification is at least as high as that of the dry process when sulphur commands a high price. If the selling value of sulphur falls, conditions favor the dry process which is therefore less sensitive to market influences. Realization of this has, in recent years, encouraged development work in connection with the dry purification process. The problem has been attacked both from the sulphur end and from the process end. As regards the former, means have been found for extracting the sulphur and restoring the spent oxide to a condition in which it may be re-used. Oxide costs can evidently be halved even if the extracted oxide is fouled again but once.

As regards the dry purification process, the chief draw-back is the small capacity of the purifiers, due to the fact that the velocity of the gas through the boxes must not exceed 0.2 to 0.3 in. per second. Because of this, 50-75% of the cost of dry purification is represented by capital charges.

The slow speed at which revivification occurs in situ is the factor responsible for limiting the velocity of the gas, since absorption of sulphuretted hydrogen is very rapid and is to a large extent completed in the first box. It has been found that absorption of sulphuretted hydrogen takes place rapidly and quantitatively even at a gas velocity as high as 2 in. per second. The efficiency is but slightly affected by temperature, providing the temperature is at least 68° F. The speed of revivification is, however, greatly affected by temperature and increased with increase of temperature. At a temperature of 105°-120° F., velocities as high as 0.8 to 1 in. per second may be employed and revivification will still be complete with the normal rotation.

In view of these facts, a cold-warm process of purification is proposed. The process is so called because purification is effected in two stages at different temperatures. The gas leaving the first box is heated by passage through a heat interchanger, and is then passed through the remaining boxes. It is, of course, necessary to humidify the gas between the stages, otherwise the oxide will be dried. Heating and humidification may be effected simultaneously by the use of direct sprays of hot water. There is no point in heating the gas before it enters the first box. This, indeed, is a drawback, since clogging of the oxide is likely to occur. If the gas has a relatively high content of sulphuretted hydrogen, heat may be applied at the inlet to the third box instead of at the inlet to the second box. In the cold-warm process, backward rotation is employed just as in normal practice.

The cold-warm process enables much higher gas velocities to be employed and the size of the purifiers may be reduced correspondingly, large reductions in capital costs being thereby realized. Existing purifiers can be adapted to the cold-warm process and, if equipped with larger connections and valves, will be able to handle the additional gas produced as a result of an extension of the carbonizing plant, additional purifiers being then unnecessary.

—A. Pott, H. Broche and H. Thomas in Glückauf. Vol. 69, p. 1153, Gas. Jour., London, Vol. 205, page 90, (1933).

GAS FOR MODERN CALORISING

Calorising processes for giving to iron and steel articles a coating which will make the metal almost immune from the detrimental influences of heat and corrosion offer an important utilization of industrial gas. Industrial applications are found in the calorising of boiler tubes for high pressure steam boilers, of carburetors for motors and of crucibles and pots used in the cyanide method of case hardening of tool steels.

The fact that aluminum cannot be plated by electro-deposition in a successful and economical manner has led to the adoption by leading firms of the calorising process for making coatings of aluminum on iron and steel.

The process is carried out in a rotating tubular furnace and the use of coal gas for external heating and for internal deoxidizing is of paramount importance. The gas is supplied externally by a series of jets so that the furnace may be heated to a dull red heat. The properly cleaned metal parts which are to be calorised are packed with a mixture of finely powdered aluminum and alumina. These articles are then placed inside the tubular furnace, the air displaced with gas and the whole heated and revolved until the desired result is obtained. The rotating serves to ensure that the iron is continually in contact with the aluminum material. The process is slow but requires little or no attention except to see that the numerous gas jets are working properly. The furnace door is especially designed to afford a maximum of deoxidizing influences during the process. When the process is completed the furnace is kept rotating until all is cold. The rate at which the rotation is maintained and the amount of gas consumed per hour are the principal factors in determining the temperature which will be accorded the charge. The calorised parts are dull white in appearance as a result of the outer skin being alloyed with aluminum.

The calorising mixture parts with its metallic aluminum partly to alloy the iron and partly to deoxidise the more easily oxidisable constituents such as silicon and iron. The easily oxidisable constituents in the iron are displaced by the aluminum and pass into the powder, whilst the aluminum alloys with the iron on the surface.

The remains of the calorising powder are somewhat impure but by adding fresh powdered aluminum the mixture can be used over again.

No attempts are made at economising in the amount of gas consumed but as it furnishes the desired low temperatures and correct conditions, it is the most popular system in use to-day.

Development may be anticipated in the near future when much of the fuel economy research at present being carried out is applied to this work.

—Industrial Gas Supplement of the Gas World, London. December 16, 1933, page 11.

EFFICIENCY OF GAS-BURNING APPLIANCES

The application of radiation and convection theory to the practical calculation of the capacity and efficiency of gas-burning appliances is made by noting that the wave length and energy maximum of radiated energy depends on the temperature. The idea of "black gas radiation" is introduced, the wave lengths of absorption bands of carbon dioxide and

(Continued on page 34)

Connecting Ranges, Water Heaters, Refrigerators and House Heaters

An Account of the Practice and Routine Followed by a Large Gas Company in Installing Domestic Appliances

By H. D. LEHMAN

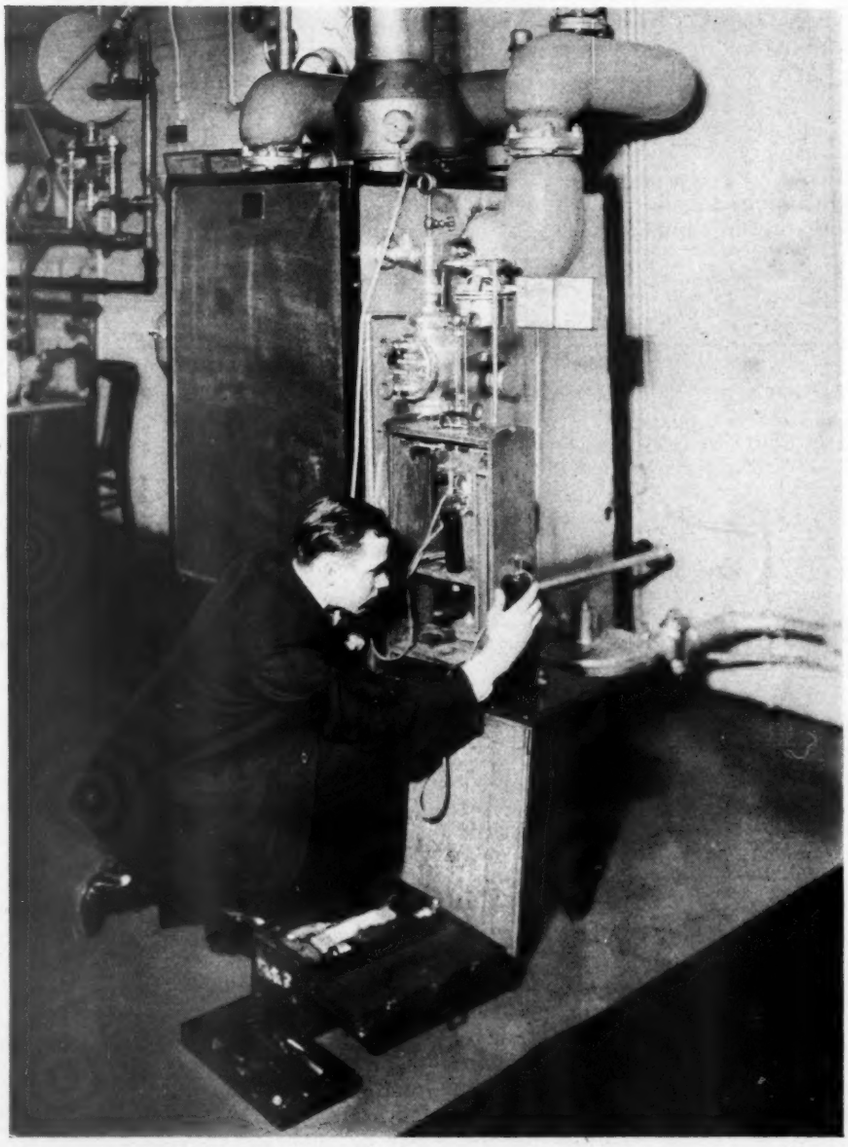
Supt. Appliance Servicing, Philadelphia Gas Works Co.

IT is to be realized that any discussion or any proposal contained in this paper is based on our local experience and necessarily limited by our own judgment, as well as certain factors of organization, etc., over which we have no control.

There are, naturally, a certain number of factors which concern the connection of all the appliances contemplated in this paper, and it seems logical to cover these factors first and then go into the things which apply only to one type of appliance.

1. The general organization set-up by which the warehousing, delivery and installation of all appliances is accomplished.
2. Customer Relations. Those aspects of installation work, which, properly or improperly carried out, importantly effect Customer Relations.
3. Promptness.
4. Scheduling of delivery, connection, collection and inspection of work.
5. The development of fitting work as a trade.
6. Type of personnel.
7. Type of Transportation.

Read before 11th Annual A. G. A. Distribution Conference, Detroit, Mich., April 9-10, 1934.



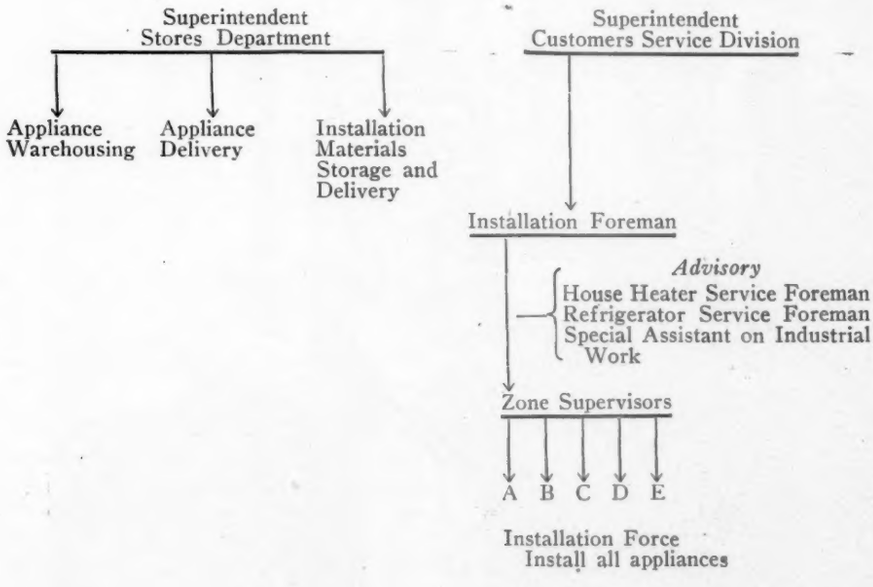
Fitter making Orsat Test—Part of adjustment routine on installation work

1. *General Organization Set-up.* As the general organization set-up shows, both warehousing and delivery for Philadelphia come under the Stores Department.

About 80% of the ranges installed in Philadelphia are warehoused and delivered by the Manufacturers directly. The remainder of the ranges, practically all water heaters, and other appliances are warehoused and delivered by the Company. In general, the Stores Department uses three men to deliver a mixed load of appliances, with four men to deliver a load made up entirely of refrigerators.

Generally speaking, we believe that the proper installation and proper starting off of a new appliance can best be accomplished by having a separate group of workmen whose sole or principal duty is to install appliances, with a supervisory force whose sole or principal duty is to supervise such installations. The advantage of such a basic organization is simply to permit all men doing this kind of work to specialize in it, and, assuming proper ability and guidance, to become quite expert in accomplishing good results.

Below is given a chart showing organization set-up for Appliance Installation in Philadelphia:



From this chart it will be observed that one foreman and 5 or 6 Supervisors and their groups of men do all installation and fitting work. The foreman who has charge of House Heating Servicing and the Foreman who has charge of Refrigerator Servicing act as consultants and general guides in the formulation of methods and general practice in relation to their type of installation work. In addition, a man with the necessary technical knowledge, in our case a college graduate, determines correct practice on industrial and semi-industrial work, in the same way house heater and refrigeration foremen do on their work. This leaves the installation foreman full responsibility for the actual doing of all installation work, together with costs, and, in addition, specific responsibility for methods on ranges, water heaters and such ordinary domestic appliances as Clow Radiators, room heaters, etc., of which in a year's time possibly 12,000 will be installed.

It is not pretended, of course, that this set-up is necessarily the ultimate, but it does seem to have substantial merit, based on experience, and has had good results as to quality and cost control.

The jobs to be assigned to individual fitters are planned the evening before by the Foremen and Supervisors and, while occasionally telephoned to a fitter, are generally delivered to him by his supervisor, who visits each fitter at least once each day.

The bulk of the fitters who are on foot do not come to the shop, except for meetings.

2. *Customer Relations*—Any work done for a customer in some way involves customer relations, of course, and therefore, in a very real sense, if there is to be a separate heading for customer relations, all items might be included. It is, in fact, our belief that all factors concerning any installation should be examined from the customer relation standpoint, particularly such factors as reduction to a minimum of the number of trips to a customer's house; the desirability of contacting customers in advance of delivery and installation, where it is feasible; the substantial importance of neatness while working, neatness of the installation itself, care in cleaning up afterwards, and the desirability of as neatly appearing workmen as the type of work permits.

Of the general items listed elsewhere, those which most concern the customer's relations are probably promptness with which the work is done and the scheduling of various visits.

3. *Promptness*—We are of the opinion that promptness of delivery and connection after sale is one of the major important items in installation work. Just what constitutes desirable speed will vary, of course, with appliances, and, from time to time, according to keenness of competition. In general, however, the customer, having purchased a new appliance, naturally desires it at the earliest possible time. In Philadelphia, gas ranges are connected on a three day schedule. This time is, in large part, the result of manufacturer delivery and the stock situation. Refrigerators are, in general connected on one-day's notice. This is partly because the customer desires this more promptly and partly dictated by electrical competition. Automatic water heaters are likewise installed on one-day's notice, again partly dictated by electric competition. House heaters are installed on a considerably slower schedule, except on "break-down" jobs in the heating season, which are usually done the day of the break-down.

4. *Scheduling*—The number of visits to the customer's house depends, of course, to a considerable extent, upon the appliance, but with the exception of small room heaters, etc., which can be and are delivered and connected from the same truck, there is always at least the necessity of appliance delivery, the call to connect, the call to check and inspect some automatic appliances, the call by Home Service Department to explain; in the case of house heaters, usually a call to collect material, and sometimes a call to collect discarded appliance.

Without going into details as to methods, it is obvious that it is bad business to have a range delivered in a modern small kitchen and left to stand around for several days before a fitter comes to the job, even if it is hardly feasible to have all calls

closely scheduled. In general, we connect an appliance on day of delivery.

Material collection is carried out by the Stores Department. To insure that all material is collected and to avoid the customer annoyance, which has sometimes occurred in the past by failure to collect at all, all delivery cards are filed in a separate file and must be cleared by a collection sheet for that particular address.

5. *Fitting Work as a Trade*—Pipe fitting, of course, has always been something of a trade in itself. Owing to the rapid increase of automatic appliances, it has become necessary to give its trade aspects still greater emphasis, so that a fitter might be able to properly assemble an automatic appliance and start it off, and so that a fitter or Supervisor would be in a position to make gas pressure surveys, water pressure surveys, check safety pilots, gas consumptions in relation to rated consumptions, make carbon monoxide tests and, when necessary, use an Orsat apparatus.

6. *Type of Personnel*—If high quality of work at reasonably low cost is to be accomplished with appliances now in use, I think it is obvious that a high type personnel is indispensable, preferably men with high school or trade school education and a capacity to learn and apply semi-engineering facts and use fairly delicate instruments.

7. *Type of Transportation*—The fact that all of the work for the entire city is done from one shop to some extent influences transportation assignment.

Foremen are assigned Ford Coupes.

Supervisors use ½ ton Fords with express bodies.

The few men who do range installations are assigned ½ ton Panel Body Ford.

Fitters who install the great bulk of the appliances travel on foot carrying their own tools with them.

For deliveries the Stores Department uses vehicles 2 ton and up, depending on the type of appliance.

Connecting Ranges

Since gas ranges have been connected for many years, it is improbable that there are any novel features concerning their connection, except as the character of gas ranges has changed.

The great bulk, perhaps 80%, of our ranges are delivered to customers' houses by the manufacturers direct, at an approximate extra charge of $1.50 per range, which represents a substantial economy to us, avoiding our own delivery and warehouse charges. This practice largely determines our installation practice because I believe that if we delivered the bulk of our ranges, we would now be delivering and connecting them from the same truck, as we did some years ago. Such a practice, I believe is possible and desirable where the Company does its own deliveries and where in general the range sale business consists chiefly of replacements, which permit completion of a job by a driver and a helper in possibly 30 to 45 minutes on the average. With proper control, the cost should at least be no higher than on other bases and the advantages from the customers' standpoint of not having a new range delivered but not connected in kitchen is obvious.

Quick Connection of Ranges

Rightly or wrongly, we attached so much importance to the desirability from customers' relations standpoint of not having a range sit around in small metropolitan kitchens over-night, or longer if it can be avoided, that we have set up a close system of checks with the manufacturers, so that even on the present basis over ¾ of our ranges are connected within less than ½ day of delivery. Even with the close follow-up, however, it is still difficult to immediately remove old ranges when this is desired by the customer, which is another and distinct advantage of the first system.

The connection of ordinary ranges is generally done from ½ ton panel body Fords, partly because the jobs are fairly far apart and partly because of desirability of avoiding more visits to a customer's house than necessary. On jobs delivered direct by the manufacturer, which is the great bulk in Philadelphia, an extra visit would be necessary to deliver material. These half-ton trucks are manned by a fitter and helper and are equipped with enough material to make any ordinary range connection. Most of the jobs are completed from the half-ton Fords in less than one hour and the average production per truck is 7 to 8 ranges per eight-hour day. As a specific guide, we have set an arbitrary limit of 1½ hours that a truck may spend on a job. If the truck fitter estimates the job will go beyond that time, he leaves the necessary material for connection and a street fitter is sent on foot to complete the job, the truck fitter phoning back to the shop to have the street fitter sent.

Location of ranges in Philadelphia is essentially independent of the chimney location, because a flue connection is a great rarity. For that reason, the location is that desired and selected by the customer, provided it be 4″ from an inflammable wall with non-insulated oven and 2″ if oven has ¾″ or more insulation. We stipulate, further, that the space between the flue box or deflector on back of range and an inflammable wall should not be less than 2″. In any case where the oven flue products discharge horizontally toward the back or sides, a clearance of 6″ must be provided and the wall adequately protected. If the wall is fireproof, ½″ clearance only is required between range and wall. In the case of Pullman kitchens, our requirements call for openings at least 5 square inches in area at both top and bottom of doors, omitting the top opening if the kitchenette is vented.

On range connections it is our practice to place a nickel plated floor plate where the pipe comes through the floor and to paint black all the pipe in the kitchen. In addition, on clock ranges a ¾″ cock is installed near the range, and in the inlet side of the union. The purpose of this cock is to facilitate service work on the clock actuated valve on back of range, by eliminating trip to the basement to shut off the gas to the entire system supplied by the meter.

Fitter Must Take Pressures

On all range connections the fitter doing the job is required to take gas pressures before and after connecting the range; that is, on the old range he takes the pressures with no load and full load, likewise on the new range, provision being made to enter these figures on work orders. Maximum pressure drop of 1.6″ is allowed. In addition, before leaving the job the fitter is required to adjust the top burners so that the outside cone just touches the bottom of pots without floating and to adjust the oven to rated input according to the A.G.A. standard of 8,000 B.t.u. per cubic foot of oven space, etc., clocking meter if the oven has an adjustable orifice, which is usually the case. This last practice was established because of some none too pleasant experiences resulting from over-gassing under other adjustment methods.

In case of a range equipped with an electric clock, if there be no outlet, an additional visit is required either by our own electrician or an

outside contractor to create the outlet.

With the development of automatic ignition and clock-controlled ranges, it seemed desirable both theoretically and again based on some none too pleasant experiences, to have our fitters especially selected and trained so that they would not only make the proper flame adjustments but check the automatic ignition system and place it in proper operation including proper alignment of the system, because present factory assembly does not always guarantee proper alignment and functioning. In addition, we have felt it essential to teach him and require him to understand and place in proper operation, safety pilots, when, as frequently happens, ranges are equipped with them. This is not only important from the standpoint of safety of operation but also when the oven safety pilot is used as an operating control, it must be adjusted to as short an operating interval as can be properly achieved to avoid considerable irritation on the part of customer from waiting too long for an oven to light.

It goes without saying that part of every new range installation is a visit by a member of the Home Service force to explain, particularly, use of heat control, function, and effect of insulation, etc.

On about 4600 ranges the installation cost per range for 1933 was $2.98 including overhead, and about $4.04 for electric outlet, etc., but not including transportation.

Connecting Water Heaters

Water Heater connections might be divided into four general groups:

1. Circulating
2. Automatic Storage
3. Automatic Instantaneous
4. Large volume water heaters

1. *Circulating*—The number of circulating water heaters connected, of course, seems to be substantially on the decline in some territories and probably does not justify any very exhaustive description. In general, it is essentially a case of either connecting into a hot water outlet at the tank and a draw-off cock at the bottom or the creation of two outlets in the tank and the use of tank couplings to connect the circulating heater itself to the tank. Usually the tanks are not insulated and the only problem outside of the simple connection is an equally simple flame adjustment.

In Philadelphia a flue connection on a circulating water heater is exceptional, although I understand that it is required in some locations. We only require it—

(a) If the consumption of the heater is 40 feet per hour or more.

(b) If less than 40 feet and in a space which will not comply with the A.G.A. rule of 30 B.t.u. maximum input per cu. ft. of air space.

(c) In a bathroom or bedroom.

(d) If the water heater is subject to distant control by an electrical device, with a constantly burning pilot.

In some sections I believe these installations are modified into an automatic job by strapping a thermostat around the tank and insulating it. Since we have done none of this, I am not in a position to comment on such installations.

2. *Automatic Storage Water Heaters*—In a number of places, and certainly with us, the large volume of water heater connection work takes place in this classification.

Up to a little more than a year ago, our practice on automatic water heater connections was to have an Inspector visit the job ahead of time, make up an order for the material required to connect the heater, then this material was delivered with the heater,—probably the following day. On investigation, looking towards lower costs and better service, it developed that the great bulk of pre-inspections were very close, one to the other, in material required. It was then decided, and has been the practice since, to drop pre-inspection of automatic water heaters and deliver with the heater one of two standard P. I.'s, depending on whether job was to be flue connected. This practice appears to have been successful in supplying enough material for 85% or 90% of water heater jobs. On the remaining 10% or 15%, the Supervisor delivers the necessary material to the fitter on his regular visit to him.

All domestic automatic water heaters are considered one-man jobs.

All water heater jobs are post-inspected by the Supervisor. When the Supervisor's visit happens to occur at practically the completion of the job, this is counted as post-inspection and he makes the necessary checks at this time.

On completion of the job, the fitter is required to check the gas consumption against the rated consumption by a two-minute meter reading, if the orifice is adjustable; if fixed, by determining the size of the orifice and the gas pressure, combining with the use of a table; check the operation of the safety pilot; to leave proper flame adjustment and check the thermostat for the proper temperature setting, and to check chimney draft—with a differential gauge if necessary.

The Supervisor on his post-inspection also makes these checks and in addition takes gas pressure with the load on or off to determine if there is any excessive loss; takes water pressure readings where desirable and enters this data in places provided on the work order form. In addition the Supervisor instructs the customer on the use of the heater; that is, how to light it, how to alter the water temperature if the customer desires, for wash-day for example, and about what service to expect from the heater in the way of quantity of hot water and recovery.

This feature is also covered by the Home Service Department on its later visit to the premises.

So far as the actual connection of the heater is concerned, one of the most important points is probably the proper location of the heater itself. It appears obvious that, subject to the limitations of flue length, which we arbitrarily set at 15′, the heater should be spotted as near as possible to the point of greatest use. On low recovery water heaters not using more than 5,000 B.t.u. of gas per hour, a flue connection is not made and here, of course, the heater should be definitely spotted at the point of greatest usage.

Use of Copper and Steel Pipe

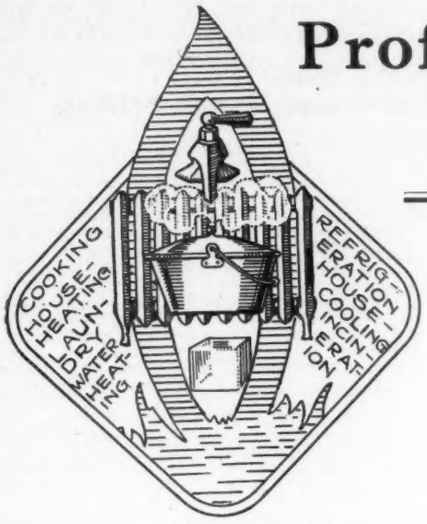
Any hot water piping run by us is usually of ¾″ or ½″ size (steel pipe) unless the installation is a very large one. On a few special jobs we have used copper tubing of ⅜″ internal diameter, to tend toward lower gas bills, but have not made a sufficiently large number of installations to have any definite opinions on this practice as yet, except that it would probably not represent an economy on jobs where the average gas bill for water heating is $2.50 per month or less.

The actual physical work of connection, including the use of tools, etc. is not largely different than formerly and probably calls for no elaboration, except possibly to say that it is our practice to first connect the gas, then the cold water so that the heater may be lit and have the water heated up to test the thermostat while the fitter finishes his hot water and flue connections.

In Philadelphia it has been the practice for several years to use a valve designed to shut off the gas

(Continued on page 27)

Profitable Pointers



DOWN in "Dixie" there's a gas man who is very fond of conducting sales contests among his salesmen. Naturally, whenever he stages one of these activities, he has to devise a score board of some sort which is hung in the salesroom and on which the results of sales are recorded. He has used gas holders, thermometers and the like for so long that he had about run of ideas, when, in talking about a quota he'd set, one of his men said: "Eh! that's easy; it's grapes to make a quota like that."

"Here," said the sales manager, "is an idea; my next sales chart will be in the form of a huge bunch of grapes. I will have a grape for every unit and, as sales are made, I will color the grapes"; and so, readers, this one version of how the bunch of grapes chart was born. It is an idea that you may be able to employ in connection with that water heater activity you are planning.

"ONE of big reasons that keeps a lot of of fellows sales down," said an old timer, "is because they secure a prospect, go out to make the call and, when they locate the house and find that it is in a poor neighborhood or is a modest structure, they invariably build the mental hazard, Can they afford my wares—will they pay for them?, in their mind that keeps them from making a call and oftimes a sale. I always say to new men who talk to me about selling: Never be deceived by outward appearances of houses or folks in selling."

FROM the amount of promotional material and the class of same that is coming to our desk these days we would say that this is going to be a big year for the sale of gas appliances. Gas range manufacturers are certainly doing themselves proud—one old-timer has come out with the most elaborate, well planned portfolio we have ever seen. Opening up with the story of their new line this organization goes right through to the modern gas kitchen. The plan contains letters, contests, salesmen's manuals, newspapers and direct mail advertising—in fact anything and everything needed to sell gas cookery. In the gas water field plans equally as important and complete are going forward. Gas refrigeration is also all set to make this the biggest year in the history of the business. Just what the home heating equipment folks are doing we are not going into now, but you may rest assured that their plans are going to be well worth while and follow right along with the others mentioned. We will say that there will be a new push given one of the gas furnaces, which will be interesting to watch.

GAS men over the country are studying the "Rental Plan" used by a number of companies during the past year to sell automatic gas water heaters. Opinion is divided as to the merits of such a plan and, as one pretty thoughtful merchandiser put it a few days ago, "It seems to me we will do a little more investigating before we go in for the plan in a big way. It is hardly old enough for us to dash right into at this time.

True we need the load but we want to know that we are not going to have a lot of reverts when we sell appliances of any type on a big scale. You know we have gone through these high-pressure campaigns before and we are not going to be in any hurry to put out a lot of merchandise just for the fun of it."

What this man said is worthy of consideration, for we can ill afford to have a lot of reverts on any appliance." After all, if and when we become good enough to convince folks that they need and want our wares, don't you think they will find ways and means to purchase them?" asks another gas merchandiser.

"NOW," said the Commercial Manager of a south Atlantic Gas company, "is the time to distribute cook books featuring the new line of gas ranges and providing the housewife with a number of new recipes. April and May are the two best months in the year to sow the seed of dissatisfaction with old cooking methods and old style ranges in the minds of the home manager. The best way to do this is to present them

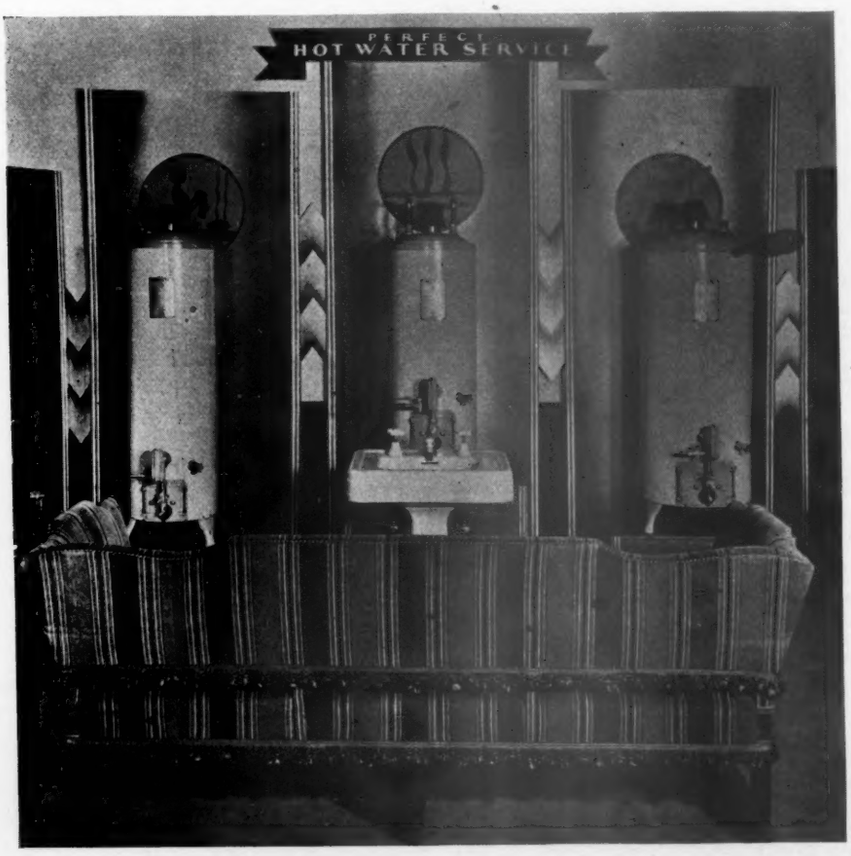
with up-to-the-minute catalogs and cooking recipes. We are going to do this in the following manner this year: Each of our outside salesmen has been told that there are a number of cook books set aside for his use, and that he may secure them by presenting the names of prospective purchasers to me. For each name presented he will be given a cook book which it is understood he will deliver in person to the housewife whose name he presents. Aside from this he agrees to make a complete report (card provided) of his presentation. This we feel sure is going to boost not only gas range sales but will develop many prospects for gas refrigeration and water heating." This is another new twist to an old idea and we would say it is an excellent one; one that will produce all summer long for the men who work the plan as laid out. Non-exposure is one of the things a great many salesmen are suffering from right now. We all know that unless we expose ourselves to sales we will not sell anything.

WHEN you read the announcement that small town gas companies carried away the prizes in the American Gas Association's Ice Cube Contest, you can come to but one conclusion: To win contests or commissions or what have you, you have

to plan your attack and attack your plan. In short, the rule for success in any endeavor is about the same and may be summed up in five words: "Plan consistently—work the same way."

THE promotion manager of a large operating group told me the other day that he had had requests from several properties for information and prices on gas griddles, waffle irons and toasters. Inquiry developed the fact that many requests for these items were being made by customers who had formerly used such appliances and who, during boom times, had discarded them for what one sales manager called the "more fussy appliances." The "fussy appliances," so it seems, have gone on the "fritz" and the customers are again turning to the less expensive yet practical gas toasters, griddle irons and waffle bakers. Here, you fellows who are after those B. t. u's., is an idea for you. Why not have a drive on some or all of these items.

WHEN you advertise an item via the printed page and through window display advertising, do not stop there—build a suitable display in your store. As a suggestion along this line we are reproducing a group of gas water heaters setup in booth form with a background and an easy seat for folks to sit in while the salesman goes into the merits of the appliance, cost, terms and the advantages of hot water service to the home. Backgrounds similar to this one may be constructed in the form of flat panels or may be made semi-oval in shape. Colors used may be silver or gold bronze or some other cool color; cut-out silhouettes painted black may then be mounted to the panels to make the display complete.



THAT cooperative selling and advertising program being sponsored by the Chicago Gas Utilities Companies promises much. When a group such as the Peoples Gas Light and Coke Co., North Shore Gas Co., Western United Gas Co. and the Public Service Company of Illinois concentrate their advertising and sales efforts on one object, results are bound to follow. These gas companies are, like many others over the county, aware of the fact that they have to keep that old domestic load. And while there are not many localities so fortunate as to have two, three, or in this case, four big operating companies grouped in such a compact area, every gas company in the country through some type of cooperative group may advertise the advantages of GAS COOKERY and should. It is said that the gas companies of Greater Boston will promote the use of gas, starting at once along the lines employed by the gas companies in the Pittsburgh area last year.

A New Deal in Cooperative Gas Range Selling

The Chicago Gas Utility Companies, composed of the People's Gas, Light & Coke Company, North Shore Gas Company, Western United Gas Company, and the Public Service Company of Northern Illinois, a group of six gas range manufacturers (of which this Company is one), and the Chicago retail gas range dealers have formed an organization known as the Gas Appliance Society of Metropolitan Chicago.

Above is illustration of double check seal of approval which will be on all gas ranges sold in Metropolitan Chicago area by co-operating gas range manufacturers associated with the "Gas Appliance Society of Metropolitan Chicago."

This organization had its inception in the fall of 1933 and launched its preliminary promotional advertising last November.

On the evening of February 13th, the annual meeting of this organization was held and it was surprising to note the interest and enthusiasm of the retail dealers, some 450 of which were present, together with representatives of the gas companies and executives of the co-operating gas range manufacturing companies.

The purpose of this Society is to promote the sale of modern gas ranges. The story of the modern gas range will be broadcast to the people of the Metropolitan Chicago area through the medium of the radio, outdoor advertising and large newspaper advertisements running at frequent intervals.

The consumer promotional campaign will prominently play up the double check seal of approval, which will be placed on all ranges built by the gas range manufacturers co-operating in this movement.

The plan of activity, which has been formulated by the directors of the Gas Appliance Society, is more extensive in its scope than any co-operative movement ever before planned for the promotion of gas range sales.

In addition to the promotional advertising, the Society offers to co-operating dealers a number of important services, designed to help them sell more and better gas ranges. One division of activity of the Society will be the formation of a training school, to which Chicago retail dealers can send their salesmen, so that they can be educated as to the right way to sell gas ranges as well as teaching them what a modern gas range is and what its features mean to the consumer.

The Society has also organized a display division under the direction of an expert. This display division offers its services to dealers in an advisory capacity in the formation of interior display arrangement, even going so far as to create for the dealer, at cost, the complete display.

Still another function will be that of a modern kitchen planning service. This kitchen planning service will make it possible for the dealer to offer his customers a kitchen planning service, that is a complete layout as to what would constitute a modern kitchen in the consumer's home, taking into consideration the size of the kitchen, location of the existing permanent appliances, such as built-in cabinets and kitchen sink.

There has also been organized a field crew composed of men who have had experience in direct personal selling. The function of the field organization will be to visit dealers, keep them advised as to all activities planned by the Society, and to help them in all ways possible.

The various services itemized above are offered to the co-operating dealers without charge. The only requirement for the dealer to become a member of the Gas Appliance Society of Metropolitan Chicago is that he handle and display on his sales floor one or more lines of the co-operating manufacturers.

The object of the Society is to (1) Increase the unit sale of gas ranges. (2) To raise the average unit price of all gas ranges sold, thereby making gas ranges a more profitable sales unit. (3) To make the housewife more kitchen conscious and particularly "gas range conscious". (4) To implant in the consumer's mind a better understanding and appreciation of gas service and to stress the fact that the most modern means of cooking is the modern gas range.

Connecting Ranges, Water Heaters, Refrigerators and House Heaters

(Continued from page 24)

should the heater tend to overheat for any reason, such as dirt under the thermostat seat. Originally these were of the exterior type and the gas and water lines brought together, each running through the valve, and the valve placed as close to the heater as possible—never more than 6" away. This, of course, is so that radiation losses should not be in a position to cool too much the water that reaches the valve and make the emergency valve less satisfactory, or of no use at all, for its safety feature. It seemed to us that the ideal of this valve was the Immersion type and for some time now we have used only the Immersion valves, which extend into the tank—usually in the hot water outlet—and have the gas line conducted through the valve body which is just outside the tank. In this type connection it seems essential to us to insure that the end of the valve project into the water about 1" or more below the crown of the tank to avoid any possibility of air acting as an insulator and rendering the fusible element of the valve inoperative. One maker now furnishes this valve with his heater as integral part of the mechanism at the point where the thermostat enters the tank. This seems a very satisfactory arrangement.

Use of Pressure Relief Valve

Most of the water systems in Philadelphia are open, and on these the emergency shut-off valve is the only valve of this general type used; on closed systems, however, we also put a pressure relief valve in as an extra precaution and if connected with some other source of hot water, such as a bucket-a-day, a temperature relief valve is used.

On low recovery water heaters we consider that five in the family is the maximum that can be supplied with a 45 gallon and seven with a sixty gallon heater. A maid is counted as two persons in this. The Supervisor or fitter is responsible for checking the facts before beginning installation.

An outside flue is never installed if there is any possible way out of it and if its installation is necessary, it is never stopped under a window, a star ventilator is placed on top and the outside flue lagged.

Under conditions where back drafts are prevalent or apt to periodically occur for a considerable period, an air turbine is usually placed on top of the chimney or outside flue.

No water heaters are installed in conjunction with furnace connections.

Fitter is required to test the draft of every chimney before starting job with a burning paper or match. If there is not a definite pull, the draft is then checked by means of a differential gauge. The Supervisor checks this point subsequently.

The total cost of connection of automatic water heaters last year was $14.19 which included slightly over $3 per heater for the High Temperature Gas Shut-Off Valve and about $4 per heater for all valves, so that the actual connection, other than valves, approximated $10, and is currently running about $9.

3. *Automatic Instantaneous Heaters*—Connection procedure on these heaters is substantially the same as automatic storage water heaters except that a water pressure survey is made in every case prior to installation and that all these jobs are pre-inspected.

4. *Large Volume Water Heaters*—Large volume water heating installations vary somewhat of course, with each individual job and may involve any size tank from a few hundred to a few thousand gallons, and may involve a fair number of makes of gas heaters, provided they have large recovery capacity. As is the case with presumably all other companies, we sometimes use small house heating units for this purpose.

Whether these jobs be at a Baseball Field—like Shibe Park—an Industrial establishment, or large restaurant, they are apt to involve somewhat different circumstances and each one is laid out by the Supervisor in conjunction with the foreman or an Engineering Assistant who is usually a college graduate. Our experience before adopting this policy was that less competent supervision was apt to result in laying out the job so that by-passing would occur and excessively hot water be delivered at shower head; the thermostat be placed wrongly in the tank, or circulators improperly connected and unsatisfactory results occur.

It has recently been our custom on semi-industrial or industrial jobs of any consequence, to set a water temperature recording gauge to determine that the job is actually functioning as intended.

Connecting Refrigerators

This Company delivers all refrigerators installed by it or by dealers or plumbers, delivery taking place from the usual large Storeroom truck with three or four men on it, depending on on the size of the refrigerators to be delivered and the amount of "carry" involved.

While the delivery methods are identical, the method of connection more or less naturally divides itself into two classes—

(a) Water cooled
(b) Air cooled

Our experience has been that on the usual individual domestic job the amount of material does not ordinarily vary much from job to job. Here again standard P. I. has been decided on and is adequate for 90% of the jobs. If any additional material is needed, a telephone call is made to the shop by the fitter on the job and his Supervisor usually brings the necessary additional material.

(a) Since water-cooled jobs are apt to take a fair length of time, it becomes unprofitable to provide the fitter who connects them with a truck and he, therefore, goes on foot, using trolleys and busses of course where necessary, and generally works alone.

The fitter, before doing the job, makes water pressure readings to determine that there will be adequate water for cooling purposes when the customer's water demand is on. Except in apartments and similar locations, the horizontal gas line is extended in iron pipe, usually ½", to avoid traps. Where possible, iron pipe is used on the vertical line to the box, while in the box itself ⅜" aluminum is used. The water and drain connections are of ⅜" copper tubing (we used ¼" for a time, but where organic and other water stoppage possibilities are present, it clogs up too easily).

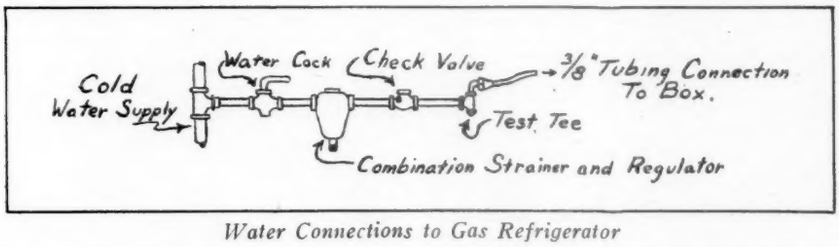
For apartment work, moulding is used where a "concealed" tubing job is not possible. Moulding is of two types; the narrow style where only one line is exposed and the wide where two or three lines are exposed. Another distinction on apartment house installations is that all these jobs are pre-inspected for material, lay-out and method of procedure. When this procedure has involved the removal of electrical refrigera-

tion with central connection, we have usually had an outside contractor, familiar with electric refrigeration, take care of "pumping down" and removing the cellar cooling apparatus.

In accordance with the regulations of the City of Philadelphia, all water-cooled installations are under the supervision of a registered plumber.

The City requires a separate connection to a horizontal drain line with a minimum of ¾" tap, with a trap of steel pipe close to the drain and with a check valve located at the same point.

The controls are of course assembled pretty much in standard fashion, but a sketch is given to show their relative assembly.



Water Connections to Gas Refrigerator

The fitter uses the following tools in connection with this work:

6" hack saw
Ensign Reynolds Flaring Tool
Combination Flaring and Bending Tool
1 Set, End Wrenches
1—4-in-1 Screw Driver
1—¾" Saw Drill on Mandel
1—¾" Pipe Reamer
1—¾" Pipe Tap
1—7/32" Drill for Sink Traps
1—¼" Pipe Tap
1—6" Wrench

(b) Air-cooled refrigerators, not requiring such a long time on the job, are generally connected by two men working from a ½-ton truck, who also connect gas ranges. The purpose and effect of this is to shorten the time between jobs and to help in reducing installation costs on both types of appliances. As in the case of water-cooled refrigerators, the standard P. I., in this case one especially designed for the air-cooled box, is delivered with the box and no pre-inspection is made. In the case of the air-cooled box, should additional material be necessary, the men being on a truck, would have it available themselves.

The factors of installation described under "water-cooled boxes," which did not concern the water or drain connection, are followed out on the connection of the air-cooled refrigerator. In addition, of course, it is necessary to observe the requisite distances from any shelf, etc., over the top or wall in back. It is the fitter's duty to do this.

On both water and air-cooled boxes the fitter lights the refrigerator and starts the water in the case of the water-cooled box, before leaving the premises. His Supervisor or a refrigerator servicing man subsequently visits the job, checks the thermostat setting, checks the water-setting on a water-cooled job, removes the needle from the main burner orifice and reams the orifice to the proper size to give the required gas consumption, using a Knight meter.

Because we are loath to install regulators without venting, and because pressure regulation in Philadelphia is quite constant in any given location, pressure regulators are not installed on our jobs. If regulators are used the conversion to fixed orifice would undoubtedly not be made by the method outlined.

During the past year the average total cost of installation on air-cooled jobs was $5.69. The average total cost for water-cooled jobs was about $11.00.

Connecting House Heaters and Conversion Burners

Since there is a rather wide difference in the work involved in both the physical installation and the proper setting and starting off of the gas designed boiler and the conversion burner, it is obviously desirable to treat them separately in part.

General Items Applicable to Both House Heaters and Conversion Burners:

Every job is inspected by a Supervisor thoroughly competent on heating and ventilating, to determine whether the system as existing will heat satisfactorily, particularly when automatic intermittent heat is substituted for non-automatic continuous heat. This Supervisor orders any necessary changes in the system, including warm air jobs, and sees that they are properly carried through.

It is only in the case of warm air heaters that all jobs are balanced for proper heating by the use of recording thermometers. On water, steam and vapor jobs such detail is only gone into when there is special reason for so doing.

The thermostat installation work is done for us on contract, although we have men competent to do it. The thermostat location is picked by this Contractor but since it is a vital point in the satisfactory operation of the system, its location is either confirmed or ordered changed by the Supervisor.

All sheet metal work is given out to contractors for the simple reason that there is inadequate volume to warrant maintaining a competent personnel.

All new jobs are visited one month after lighting, for a general check, but particularly to examine the flue condition for possible blockage as the result of scouring effect of the products of combustion.

A clean-out is installed at the bottom of the chimney on every new job and usually consists of a short piece of flue pipe with a cap in it inserted at or close to the bottom of the chimney.

A crock is always installed to receive the flue, for readier dismantling in summer when the heater is cleaned.

Cold "70" control is not ordinarily installed.

A safety pilot is always required.

There is always an independent gas line from the meter to the heater.

Gas Designed Boilers—The tools and physical methods of installation ordinarily used in Philadelphia are undoubtedly pretty much the same as elsewhere, and probably call for little elaboration. In general, the jobs are installed with screw-thread joints, with the customary tools. On screw-pipe jobs, steel pipe is used with cast-iron fittings. It may be of some interest, however, that a limited number of domestic jobs have been welded and that this method has proven quite satisfactory to the extent it has been used and that the costs, on the assumption that the work could have been done by our own organization, were as low or lower than threaded jobs. It was, however, necessary to let these jobs on contract, which of course increased the cost. The principal reason that general use has not been made to date of this method that we now know of, is that the volume of work has not so far permitted the addition of a competent welder to our force.

A house heating installation is one of the few jobs on which a pre-inspection is always, or nearly always, made. This results simply from the fairly substantial variation of individual jobs. Boiler delivery

and material delivery are of course combined.

Jobs installed during the season when no heat is required are lined up essentially on the basis of economic installation so that the old boiler is disconnected and removed, the chimney cleaned, the site of the boiler tidied up and prepared for the gas job and the gas boiler is then assembled in its final location. It is then of course connected to the heating system, flue connected and controls assembled and installed in their proper sequence. This is usually done by a gang of two fitters, although on the very large jobs, using 4" and 6" pipe, three and sometimes four men are used. When installation is done during the heating season on a "breakdown" job, speed naturally is essential and the gas boiler is assembled and placed on rollers, all ready to move into position before the old boiler is knocked out.

Steam Jobs—On steam boilers throttling valves are now installed in all cases and an equalizer pipe installed between steamheader and return, with a minimum diameter of 1½ inches.

All steam jobs are now connected through a Hartford loop, with check valves on return.

On steam jobs about 2 pounds of oxalic acid is placed in the heater and steam is then generated, it having been our experience that oxalic acid is a satisfactory preventive of priming. This is washed out before the job is left.

The fitter, after completing the installation, lights the burners, sets the consumption within 10% of rating, using a five-minute meter reading to do so, checks the operation of the safety pilot, low water cut-off, high temperature shut-off, etc., to determine that they are functioning property and then this data is subsequently checked by the Supervisor who is directing the job.

On steam jobs a check is made one month after lighting, to determine whether job is priming, and more oxalic acid used if necessary.

On steam jobs for ordinary domestic work, the setting for throttling is usually from one to two pounds, with the high pressure shut-off 50% higher.

Vapor jobs are usually set to throttle at about eight ounces, with the high pressure shut off at about a pound.

Hot Water Jobs—The high temperature shut-off has until recently been set at 180° and left there permanently, confining its function to that of a limiting control only, unless the customer voluntarily wishes to adjust it for the season of the year. Recently a spell of zero and sub-zero weather was experienced in Philadelphia for the first time since the gas boiler load was acquired. This indicated the necessity for higher water setting and new jobs are now set at 200°.

Warm Air Jobs—On warm air jobs, both gravity and forced feed, the heater is run for a short time as an additional aid in determining whether drums are tight. For this determination we simply use a nose test, although in doubtful cases a carbon monoxide detector is used on the job or a bottle sample taken for laboratory analysis.

The limiting control on warm air jobs is usually set for 275°-300°.

On forced feed warm air jobs, the furnacestat or its equivalent is set to bring the fan on at 125° temperature and shut it off at 110° temperature.

Based on sad experience, we will not any longer install a forced feed warm air job with oilless bearings.

Conversion Burners—These jobs are likewise pre-inspected, not only to determine any necessary material but to examine the boiler to confirm the salesman's findings that the boiler is in good enough condition to warrant the installation, that it will probably permit an efficient installation, and in the case of a warm air job, that it either has a cast-iron drum or a steel drum of at least 22 gauge. The boiler to receive the conversion burner must have reasonable capacity to afford pick-up in the morning.

In general the practices outlined under the A.G.A. Requirements for the Installation of Conversion Burners are followed as to the preparation of the boiler and the installation of the burner itself. However, we never recondition the flue but always install a new one.

On steam jobs a low water cut-off and high pressure control is always installed, with the settings about as indicated under "Gas Designed Boilers." Likewise, controls are installed on hot water jobs to act as limiting controls and on warm air jobs very much as on gas designed jobs.

Conversion burners installed on a gas rate competitively high calls for the adoption of methods to insure the highest efficiency possible. To accomplish this the following methods have been used in Philadelphia on several hundred conversion burner installations and judged by the fact that these jobs have averaged sufficiently close in consumption to gas designed jobs to warrant using about the same figures in estimating, would seem to be reasonably satisfactory methods:

The consumption is set according to the radiation installed, upon the basis of 50 ft. of 530 B.t.u. of gas per 100 ft. of water radiation and 80 ft. of gas per 100 ft. of steam radiation.

While it has not often been necessary to do so, in a few cases baffles have been placed in the flue passages in the boiler itself.

All boilers are lagged with asbestos cement and all cracks sealed with boiler cement, to prevent excess air infiltration. On each job a test is

HOUSE HEATER TEST BY FLUE GAS ANALYSIS
Form 45-63140 1M 1-23-34 Date .....

Address ..... Name .....
Appliance ..... Date of Test ..... Meter No. .....
Size .....
CONSUMPTIONS WEATHER CONDITIONS Index .....

Rated ..... Barometer .....
Actual ..... Outside Temp. .....
Throttled ..... Wind Velocity .....

Flue Temp. (below draft hood) ..... Flue Draft (above draft hood) ..... inch

	Conditions Found On Test			
	CO_2 %	O_2 %	CO %	Changes Made
First Test				
Second Test				
Third Test				

Remarks .....
Signed .....

Form for Recording Orsat Test on Househeating Installation

made to determine the percentage of O_2, CO_2 and CO, the first two being determined by an Orsat apparatus operated by a Supervisor and the latter by a mine safety CO detector, likewise operated by a Supervisor. In addition, stack temperatures are determined just above the draft hood. The accompanying form is used to record this data for each job and a permanent record is made of it.

Effort is made to keep the oxygen between 4% and 6%, the CO_2 on our gas above 10% and the CO either entirely clear or not more than .05%. As yet it has not proved necessary to obtain this data on an air free basis. To accomplish these results a "flue wafer" or an "orifice piece" is inserted between the draft hood and the boiler to restrict the flow, it sometimes being necessary to use several different sized "flue wafers" before the desired figures are obtained, and this of course involves several tests.

We naturally believe that the use of these methods is essential to obtain efficiency and likewise safety in the event of a blocked chimney, whether or not we later change our methods of CO determination.

A Novel Pilot

The Safety Gas Device of Bosch Is Claimed to Overcome Many of the Objections Alleged to Obtain with the Average Safety Pilot for Gas Appliances

By Dipl.-Eng. FREI

Das Gas und Wasserfach, vol. 77, pp. 21-25, 1934

BY further experiments it was determined how the pilot behaves under the influence of changes in the initial pressure, a procedure which develops at the pilot light source. By increasing the pressure and then returning to the original pressure it was determined with an accuracy of 1% by the measuring method applied that there was no deviation from a constant nominal load.

The Control Valve—The main valve can only be opened when the "expansion" lighter valve is opened, in other words, only when the pilot light is burning. It closes when gas ceases to flow to the pilot flame. The main gas supply will either flow or stop, depending upon whether the pilot gas is on or off. A small control valve 6 in Fig. 7 serves to determine this action. This valve can either be regulated by hand or automatically by means of a connecting device, depending for its action, for instance, on the temperature, the time, or the flow of water, etc. A small throttle or construction, l-f, is provided so that the pilot flame does not go out completely every time that the pilot gas is stopped, thus serving to light the gas when restarting. The throttle is connected with the gas passage 4a which also leads through the control valve and to the chamber A. Only sufficient gas flows through the throttle l-f (by test about 61 cu. in./hr.) to allow a small pilot flame to burn in the expansion lighter, the heat from which is sufficient to keep open the expansion lighter valve.

If the control valve is closed, a uniform pressure is maintained between chambers A and B by means of the constriction 1.e. (Fig. 7), while the pilot gas can flow unimpeded through the constriction 1f; the main valve is also thereby closed.

By opening the control valve the pressure drops in chamber B, until the greater pressure in A opens the main valve 3. In this manner the gas is forced out of chamber B.

Gas flowing over the partly opened regulating valve 10 through the control valve throttle 1e; for a short time produces a pilot flame 2 to 3 inches long, until the main valve permits a normal quantity of gas to pass. Then on account of the throttling action of the regulator, the pilot flame is reduced to approximately 1 to 1½ in.

The Push Button—The pilot flame valve can only be opened by the effect of heat on the membrane center —the light from a match is sufficient. To enable one to ignite the pilot flame with an ordinary pocket lighter there is connected with the upper pressure chamber A a special ignition gas passage 8a (Fig. 8) which is closed by the push button 8. This gas passage (8a) either surrounds the pilot light gas line 4a, or it might be run parallel to this, and the push button can be attached wherever it is most convenient (Fig. 9).

If one presses the push button 8 gas flows in the gas line 8a through the opening E in the ignition head and out the burner hole O where it can be ignited. The main valve 3 is always closed when one presses the push button.

As Fig. 14 shows more clearly, the gas for the ignition lines is first removed from the upper membrane chamber A_2, undergoing a more or less strong throttling action through the regulating valve F. One can therefore light the pilot flame without fear that the main burner will ignite simultaneously. In opening the push button valve there is a decided fall of the pressure P_v in the chamber A_2, but the pressure difference P_v-P_h in the chambers A_2 and B_1 is not sufficient to open the main valve 3, because the spring tension is strong enough to keep it closed.

Slow Ignition—With burners having a comparatively large gas capacity a careful and slow opening of the gas valve is advisable. With the Bosch pilot device this is accomplished by means of a brake valve 7 situated in a partition of the lower

pressure chamber, which is divided into the lower membrane chamber B_1 and the lower pressure chamber B_2 (Fig. 10). The valve plate 7a, which is pressed in its seat by a light spring, has a small hole in its center.

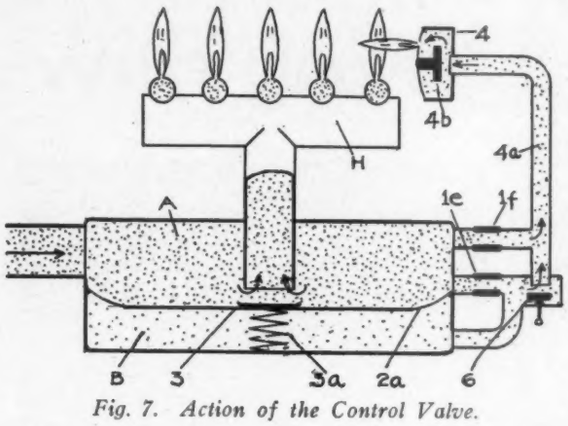


Fig. 7. Action of the Control Valve.

If the main valve opens, then the gas in the lower membrane chamber B_1 is compressed and can only escape through the small hole in the valve plate 7a into the lower pressure chamber B_2.

The effect of the braking action is graphically shown in Fig. 11. The sharply bent curve indicates the effect of a sufficiently large pressure; the broken curve represents the nominal passage of the initial pressure just sufficient for overcoming the resistance of the gas pilot. Now the main valve is fully opened. After the action of the control valve 6 in Fig. 7, the main valve starts to open in about one second. After this, the flow of gas gradually increases further for 1 to 1½ sec., until sufficient pressure has reached the desired value. If the initial pressure is insufficient to open the main valve, it must open itself, so that the opening time takes somewhat longer, approximately 4 sec., as the broken line indicates.

If the main valve is closed the gas can pass almost instantly into chamber B_1 because the brake-valve has a comparatively large diameter. The time for closing off is therefore decidedly shorter. With sufficiently great initial pressure, that is, when the main valve is slightly opened, the closing time is less than ½ sec., with insufficient initial pressure, that is, when the main valve is opened completely, it amounts to about 1 sec.

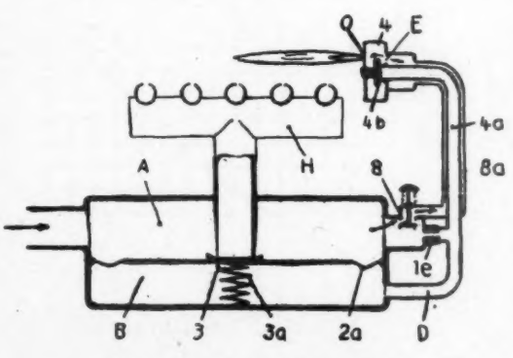


Fig. 8. Action of the Push button.

Adjustment of the Gas Pilot for Specific Amounts of Gas—As is already mentioned, the quantity of gas allowed to flow through the pilot depends upon the position of the diaphragm 9 (see Fig. 9). For practical purposes it should be constructed around the main valve 3. The safety pilot should be so installed that a gear which is placed on the rim of the diaphragm plate can be conveniently operated by a pinion from the outside. An adjustable button (Fig. 12) is attached to the pinion, carrying a graduated scale, so that one can adjust the diaphragm according to the quantity of gas desired.

The set screw 9e serves to keep the adjustable button in its place.

In gas appliances it may be necessary to adjust for a large quantity of gas, as for initial heating, and for a smaller quantity, as for continued heating. In order to allow the utmost adjustment there is provided on the adjustable button two bolts 9f, fastened by means of a nut 9g, which on turning the button, strikes against a pin M on the housing.

Four Uses of Gas—In Fig. 14 all of the herein described parts of the Safety Gas Pilot are illustrated. However, it seems advisable to briefly describe the different gas passages and their purposes.

The "Main Gas" flow comes from the left at 1b into the pilot, passing from the upper pressure chamber A through the diaphragm 9 into the upper valve chamber A_1. By opening the main valve 3 it passes through the outlet pipe 1e to the burner H.

The "Ignition Gas" passes through the regulating valve 10 in the upper membrane chamber A_2 and past the opened push-button valve 8 through the line 8a, to the hole E in the expansion lighter 4. At the opening O it can be ignited. The push-button 8 needs only to be used when the pilot is started with a small lighter or if the pilot has been ventilated, or after a long shut-down.

The "Control Gas" starts to flow out of the upper membrane chamber A_2 through the control throttle 1e when the control valve is opened. The gas comes from the lower pressure chamber B_2, through the passage D from the lower membrane chamber B_1 by way of the brake valve 7 when the main valve 3 is opened. It then passes into the line 4a and escapes through the valve 4b and the orifice O.

The "Pilot Gas" also comes from the upper membrane chamber A_2, if the control valve is closed, passing through the very small pilot throttle 1f. It passes on to the lighter by the way of line 8a. The expansion lighter through which the pilot gas supplies the pilot light should be kept open during a shut-down.

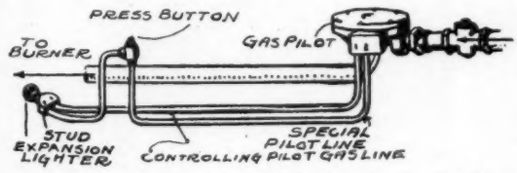


Fig. 9. Gas Pilot with Push-button in the Ignition Gas Line.

Working of the Bosch Safety Pilot—The following graphs show the pressure development in the various chambers of the pilot device at different stages of its operation. Fig. 15 shows the normal operation of the pilot by a quick starting action. A quick action of the control valve takes place in the operation for most purposes, for instance, on starting by hand or when operated by an automatic water heater (Fig. 19).

In Fig. 15 the inlet pressure P_e, which prevails in the upper pressure

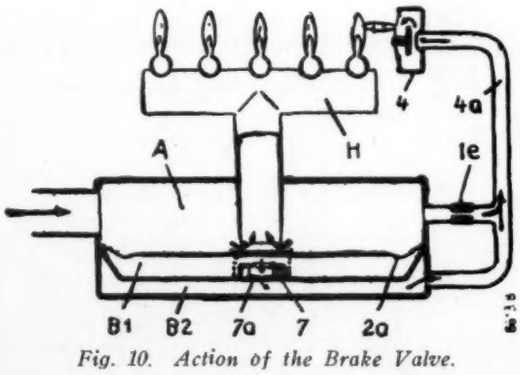


Fig. 10. Action of the Brake Valve.

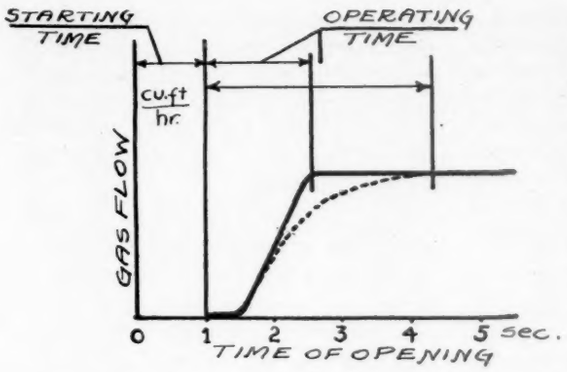


Fig. 11. Action of Brake Valve. Starting curves.

chamber A, is assumed to be constant for the sake of simplicity. If the control valve is opened, the pressures P_v and P_h drop more or less in the chambers above and below the membrane 2_a, the pressure P_h in the lower membrane chamber B_1 dropping first. The main valve spring was found to have a constant tension of about 5 oz./in. and with the valve closed a tension of 3 oz. The active surface of the membrane amounted to 7¾ sq. in. and to open the main

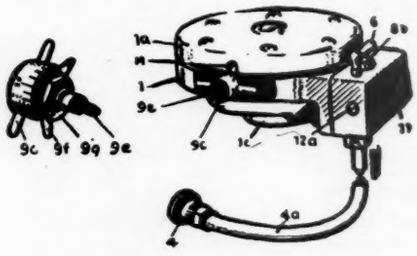


Fig. 12. Adjustment of the Gas Pilot.

valve there was required a pressure of 0.7 in. W.G.

The pressure required for the complete valve stroke of 0.2 in. corresponding to a spring tension of 4¼ oz., was 0.9 in. W.G. The pressures P_h and P_v (compare Fig. 6) drop—P_h on account of the quicker action of the throttle 1e—until the difference in pressures P_v-P_h amounts to 0.7 in. W.G., when the main valve begins to open. The elapsed time is about 1 second. If the main valve opens, the pressures P_v and P_h will only reduce a little, to such an extent that their difference corresponds with a respective position of the valve. During the opening of the main valve the pressure P_f in the valve chamber A_1 drops until the difference in pressures, P_e-P_f, registers about 0.25 in. W.G. This pressure difference serves to operate the regulating valve 10. If the main valve has opened allowing a quantity of gas corresponding to the pressure difference P_a-P_f to pass the diaphragm, then its initial action has ended on account of the throttling action of the regulating valve which now takes place. The pressure P_v and P_h then drop somewhat and in consequence thereof the pressure P_2 in the ignition gas line 4a. Therefore the pilot flame gradually grows smaller. With an adequate initial pressure the time t_2 lasts about 1 sec.

If insufficient initial pressure is available (Fig. 16), then the "Starting Time" will not at first be effected; t_2 is also about 1 sec. Toward the end of the "Starting Time" the pressure difference, P_y-P_h, is reached. This is required for the main valve to open, which it does slowly. During the opening the pressure P_f drops in the valve chamber. To operate the regulating valve 10 the difference in pressure P_e-P_f is not reached because P_e is not sufficient. Therefore, the regulating valve, remains fully opened and because the gas can flow without hinderance the main valve must remain open.

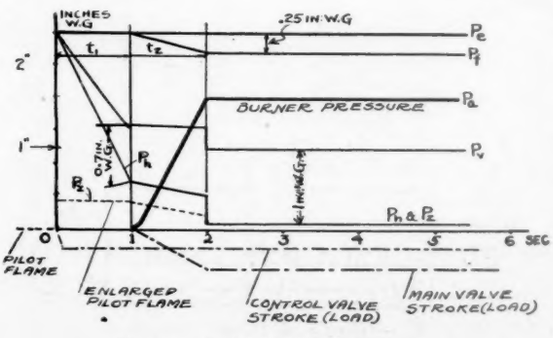


Fig. 15. Sufficient Initial Pressure.

If the main valve is now fully opened the membrane has reached its lowest position. The pressure P_v in the upper membrane chamber A_2 rises suddenly, because the gas flows freely through the opened control valve. For the same reason P_h drops toward the end of the "Operating Time" to the unchanged P_2, which remains constant, for at this instant the opening F is not throttled. The pilot flame continues to burn comparatively large. At the end of the "Operating Time," the difference in pressures, P_v-P_h, must amount to approximately 1 in. W.G., corresponding to the full stroke of the main valve.

With "Slow Action," that is, by a very slow opening of the control valve, as by a thermostat, only the "Starting Time," t_1 is substantially prolonged. The time t_2 is hardly effected at all. On account of the brake

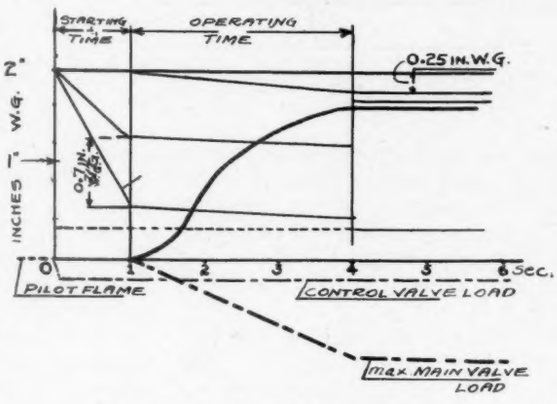


Fig. 16. Insufficient Initial Pressure.

valve not interfering with the closing of the control valve the pressures P_v and P_h quickly equalize themselves. The "Closing Time" depends upon the throttle 1e; it amounts to ½-1 sec., depending upon the position of the main valve.

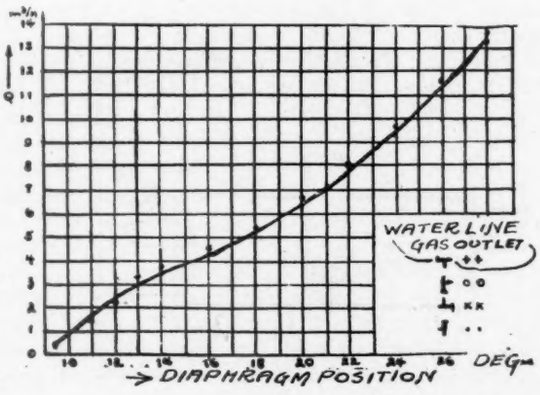


Fig. 17. Bosch Gas Pilot in Different Installed Positions. (1 cu. m. per hr. = 35.3 cu. ft. per hr.)

Influence of the Position of the Gas Pilot on Its Actions—It is important that the gas pilot should function faultlessly in any position in which it might be placed in industrial practice.

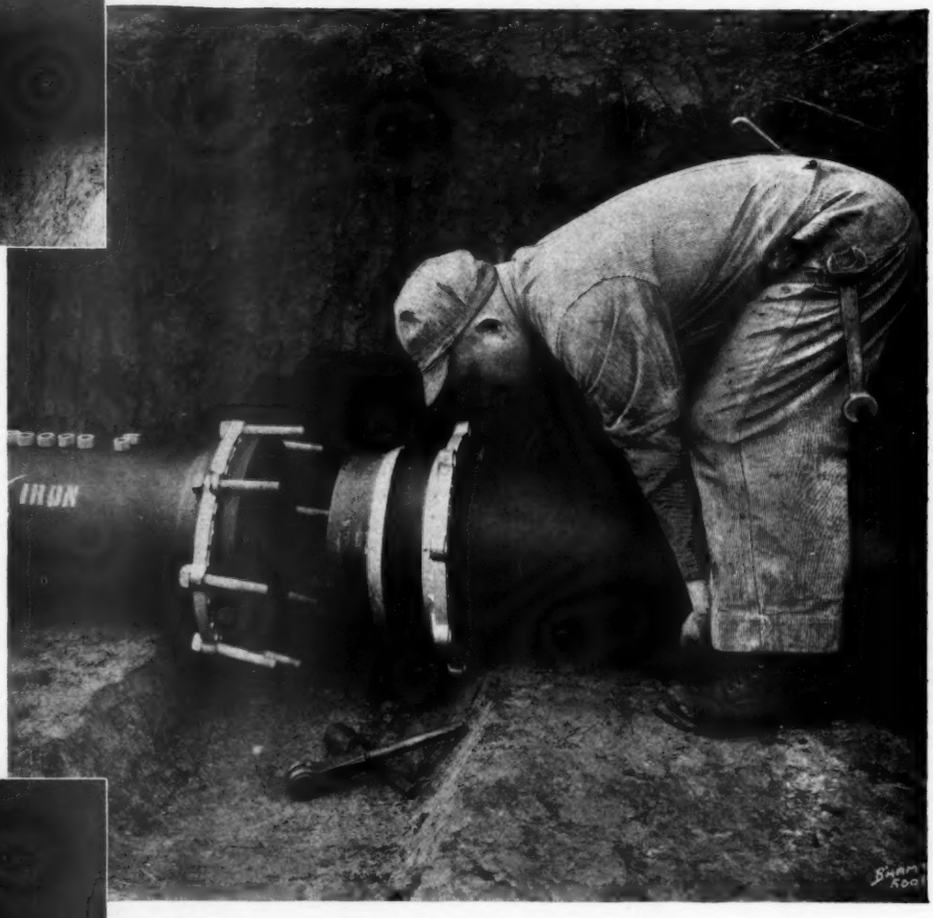
The results obtained by testing the pilot in four different positions are

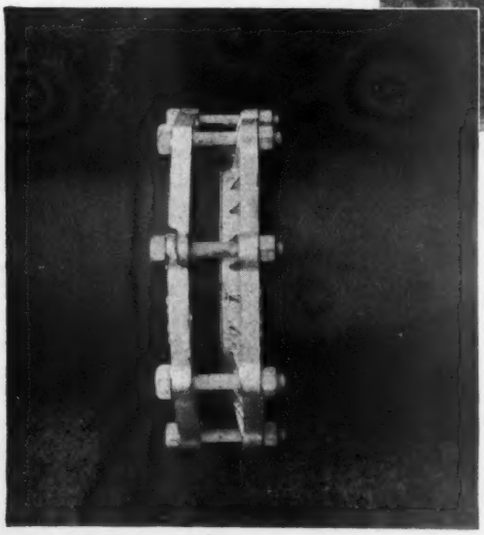
(Continued on page 34)

CAST IRON PIPE
with gas-tight mechanical joints

The several mechanical joints made by members of this Association differ in design but are based on the same principle.

All these joints have rubber gaskets and follower rings. All are rendering gas-tight service under high pressures.





Note the ease and simplicity of installation. No skilled labor. The only tool a ratchet wrench.

THE CAST IRON PIPE RESEARCH ASSOCIATION
Thomas F. Wolfe, Research Engineer
309 Peoples Gas Building, Chicago, Ill.

A Novel Pilot

(Continued from page 32)

schematically shown in Fig. 17. With a constant initial pressure, there was determined the relation between the quantity of gas flow and the position of the diaphragm, Fig. 17. It is shown that its position has practically no influence, therefore the pilot can be installed in any position which is necessary for its use.

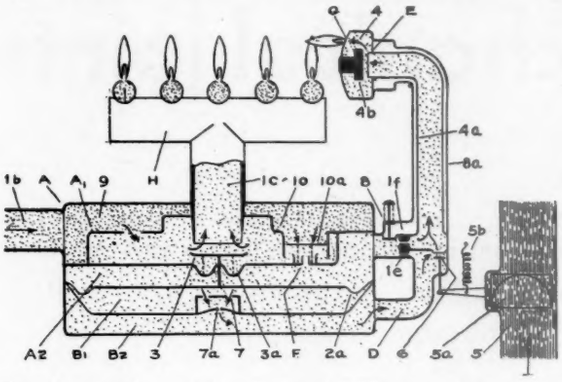


Fig. 19. Action of the Control Valve by a Stream of Water

In the construction of the Gas Pilot it is advisable to assemble all the inner parts, in one interchangeable part, as shown in the middle picture (Fig. 18).

The Pilot Light line which is shown on the right of the rectangular figures is attached to the detachable push-button flange 11 (Fig. 12).

In Fig. 19 it is shown how the control valve 6 is worked by a stream of water, as for instance by a hot water heating apparatus. The spring 5b on the control lever keeps the valve 6 closed when not in use.

(Note: Fig. 14 is same as Fig. 19 except water stream is omitted in Fig. 14.)

Satisfying The Customer

(Continued from page 11)

been promised. The home service girl with her sympathy for the customer, with the manner in which she answers her questions, with her ability to change attitude, can establish a feeling of confidence in our company. The customer in turn feels that the company is interested in her and anxious to be of service if given the opportunity, thus removing any doubt in her mind because she is one of many customers.

Advertising, in the aggregate, has a tremendous influence in creating national states of mind—much more so than the individual advertising man usually dreams of. Pollyannas are out of date, because the people have been fooled that way once too often. While you're looking for testimonials, however, why not consider the lady with the dish water.

"Honest, it isn't so bad!"

Gas Is Interesting

(Continued from page 13)

has turned the corner, if the advertising writers are any criterion, which I think they are. Right down the home stretch, the Peoples Gas Light and Coke Company, with a feature-tabloid style of layout, sends the word, "I'll tell you What We Think of Gas Heat—*Perfect*!" Another old-timer out of the vocabulary which is given a shave and a haircut and set to doing new tricks.

Personally, I think we can stand a little optimism in our copy these days, no matter how we may feel about the temporary state of affairs.

Technical Digest

(Continued from page 20)

water, and the fraction of energy absorbed by these bands, the energy radiated by carbon dioxide and water, the radiation of layers and cylinders, influence of wall reflection on radiation and heat transfer by convection. The heat transfer number increases with decreasing size of jet so that numerous small burner openings are preferable to one large opening. Flue-gas removal, friction in pipes and other flow resistances are discussed as well as effect of excess air.—*Werner Geck, Gas a. Wasserfach, Vol. 76, pages 817-833 (1933).*

A Fine Plan

FOR the first time in the history of the gas industry members of the two major producing elements—the utility companies and the manufacturers—have combined to organize one of the most powerful and effective co-operative merchandising campaigns ever to be conceived.

The officers and directors of this newly formed organization, the Gas Appliance Society of Metropolitan Chicago, are men high in the utility and merchandising fields. They have built up an organization which has already received remarkable dealer support. Charles S. Maginnis, of The Fair, is president. James Parker of the Wieboldt Company, vice-president, and Charles A. Luther, of The Peoples Gas Light and Coke Company, secretary. Managing directors are Theodore V. Purcell, vice-president of The Peoples Gas Light and Coke Company, and John A. Fry, vice-president of the Detroit-Michigan Stove Company.

These leaders are fully aware of the lack of merchandising effort put in back of gas appliances and have realized that the immediate need for a strong merchandising program is co-operative action. Today, the gas industry is dealing with a different public. A public that not only knows what it wants, but fully expects to get it.

This campaign is a brand new deal which will establish new ideas of merchandising. Its importance cannot be stressed too much when it is realized, that in the Chicago area alone, there are 1,125,000 gas ranges —of which less than fifteen per cent are of the modern type!

In general the utilities have been too ready to assume that the public already knew all about the efficiency, cleanliness and other merits of these new type ranges. Certainly, the facts prove just the opposite. For the greater majority of the homes in America are still equipped with old-fashioned ranges.

Housewives know very little about the new modern gas range. And it is a well known fact that, for the lack of a unified and organized merchandising plan, they have been contented with their present old ranges. The average housewife will think of a new refrigerator, a new kitchen sink, or even new linoleum before she will think of replacing her nondescript gas range.

Consequently, it is of major importance that a definite co-operative plan has been organized and is already under way.

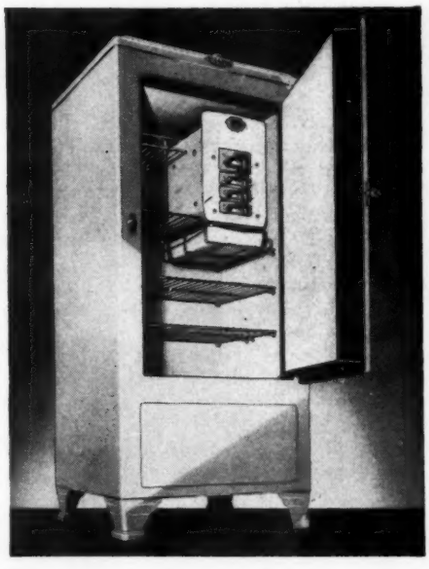
This campaign embraces not only Chicago but also outlying cities and towns served by several large utility companies.

Are you on

THE BANDWAGON

FOR THE BIGGEST YEAR IN GAS REFRIGERATION HISTORY?

If not, the time to act is now!



NINE profitable months remain in 1934 for gas companies that get behind Electrolux *at once!*

Already, leading utilities from coast to coast have swung into action with the new Electrolux. In Philadelphia and other large cities, they're holding rallies. Giving their employees the story first-hand on the 1934 Electrolux. Getting the new models in prominent display on the floor and in the windows. Organizing a concerted drive for gas refrigeration sales.

60% Load Increase!

For remember: Electrolux boosts the annual household load 60%! Years of promotional effort pushed the average annual consumption of gas to 28,000 cu. ft. Now — *overnight* — Electrolux jumps this load to 45,000 cu. ft.

And that's not all! Every Electrolux installed builds important good-will for gas as the modern fuel . . . goes a long way toward insuring another automatic all-gas kitchen . . . protects your $250 meter investment.

The beautiful new Electrolux models embody all those worthwhile modern conveniences every woman wants . . . attractive features that mean *easier* sales with Electrolux in 1934!

Start Planning, at Once!

So don't delay! Plan now for definite merchandising and sales activity on Electrolux this year. Your local efforts will be supported by the biggest advertising campaign ever run on gas refrigeration!

USES NO WATER

For full details and help in mapping out your program, write, wire or phone Electrolux Refrigerator Sales, Inc., Evansville, Ind.

NEW *Air-Cooled* ELECTROLUX

THE SERVEL *Gas* REFRIGERATOR

EQUIPMENT NEWS

New Automatic Pilot Control

The Mercoid Powerstat, an automatic pilot control solves the problem of raid, dependable, automatic pilot protection for gas burning ovens, furnaces, boilers, space heaters, floor heaters, hair dryers, or any type of gas burning appliance including gas-ignited oil burners.

The actuating unit of the Powerstat is not a bi-metallic element, but employs a new and revolutionary principle of operation not affected by ambient temperatures. The metal composing this unit is a high heat resisting alloy, which has practically no fatigue point within the range of ordinary combustion chamber temperatures.

The Powerstat operates on a time cycle of from three to five seconds to open or close an electric circuit. This operation is uniform, regardless of the length of time a burner may have been in operation and whether or not the test is made in the laboratory or in an actual heating appliance the time does not vary more than a fraction of a second. The pilot flame is protected by a unique shield which defies drafts and burner concussions to a very surprising degree.

The Powerstat may be used in any typical electric thermostatic circuit either two wire or three wire, low voltage or line voltage and has a capacity of ½ ampere at 110 volts or less. It is made in six standard sleeve lengths (L)—1½", 6½", 10", 15", 18", and 24", other lengths available as required, also varying heights of pilot jet to fit any combustion chamber.

Available as an accessory of the Powerstat, and also separately for use on no-automatic pilots of any type, is the Pilotrol, which regulates the flow of gas to the pilot at a definite pre-determined fate, insuring a uniform pilot flame, regardless of any fluctuations within the range of ordinary domestic pressures.

The Pilotrol is small, compact and inexpensive, is regularly made in nine sizes delivering from a minimum of ½ cubic foot, 6 gravity gas per hour to a maximum of three cubic feet.

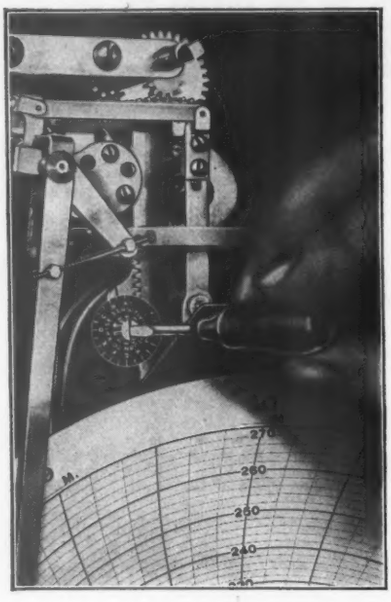
The Mercoid Corporation of Chicago, Illinois, manufacture these controls.

New Taylor "Fulscope" Recording Regulator

Taylor Instrument Companies, Rochester, N. Y., have added to their line of measuring devices, a new Taylor "Fulscope" Recording Regulator for temperature, pressure, rate of flow and liquid level.

One of the major difficulties encountered in solving control problems always has been the inability to secure and maintain either throttling or on-and-off control when desired. The difficulty has been due to the limited number of fixed "sensitivity" adjustments for balancing regulator performance against the time lag in the apparatus under control.

The Universal Sensitivity Adjuster incorporated in all Taylor "Fulscope" Regulators solves the problem in a fundamental manner by providing a full-range sliding



adjustment by which the regulator performance can be perfectly balanced for any degree of apparatus time lag. A simple screwdriver adjustment on a graduated dial gives throttling or on-and-off diaphragm valve action, whichever provides the desired type of control. The adjustment does not require a skilled operator, removal of chart, or interruption of service.

Another feature of equal importance to many instrument users is found in the fact that the regulator mechanism and means of adjustment of all Taylor "Fulscope" Regulators are the same whether for controlling Temperature, Pressure, Rate of Flow, or Liquid Level. They differ only in their means of actuation. This insures uniformity of instrument operation and processing results on either continuous or batch processes, quick and thorough training of operators, and interchangeability of parts.

A higher degree of accuracy than hitherto possible is produced by a new lightweight duralumin mechanism, practically frictionless bearings, and many other simplifications and refinements of design.

Regulator action can be converted easily and quickly from *direct* to *reverse*, or vice versa, without addition or subtraction of parts. This permits any combination of regulator and diaphragm valve action best suited to processing requirements.

Temperature or pressure regulators are readily adaptable to applications requiring a different temperature or pressure range by simply substituting a tube system and chart with the required range. It is equally easy for the operator to convert a temperature instrument into a pressure instrument, or vice versa.

A descriptive bulletin covering these new Taylor "Fulscope" Recording Regulators can be obtained by writing to Taylor Instrument Companies, Rochester, N. Y.

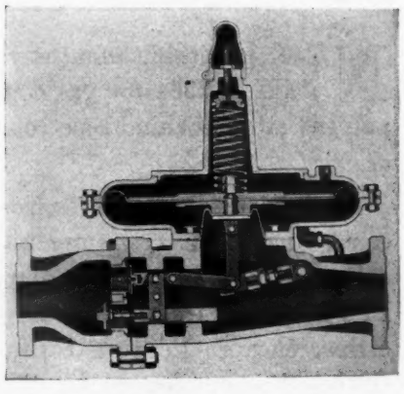
Safety Gas Main Stopper Issues New Catalog

The Safety Gas Main Stopper Co., 523 Atlantic Ave., Brooklyn, N. Y., have recently issued a new catalog, No. 33, covering a complete list of their equipment for gas main maintenance.

New Toggle Type Regulator

Reynolds Gas Regulator Co., Anderson, Ind., announce a new Reynolds Double Balanced Valve Toggle Type Regulator featuring several improvements that greatly increase the efficiency and performance of the regulator in operation.

In the old models with the valve orifices in a horizontal plane the gas made right angle turns in passing the orifice which reduced free flow. By building the regulator with the balanced valve orifices in a vertical plane the gas flows in a straight line through a streamlined channel, which greatly increases the capacity.



In this regulator, the fact that the valves travel, from the face of the orifice, in direct proportion to the travel of the diaphragm makes this regulator very sensitive and gives accurate pressure control on both small and large volumes.

Other features are: removable housing containing orifices, which can be taken out of the line, without the removal of the regulator. The construction of this housing is such that different size orifices can be installed in same. There are hand hole plugs on the side to permit the removal of the valves to renew seats. The valves are so arranged that by adjusting one of the valves, both seat simultaneously. In fact, the regulator can be completely serviced without being removed from the line.

This regulator is manufactured for reducing pounds to pounds or pounds to inches, in either spring or dead weight type, with or without pilot control, and is completely waterproofed for outside or underground installation.

MR. H. J. LONG JOINS AMERICAN-BOSCH TO DEVELOP

AMERICAN-BOSCH KOMPAK

The United American Bosch Corporation is pleased to announce that Mr. H. J. Long, former president of the Kompak Company, New Brunswick, N. J., and one of the foremost water heating authorities in America, is now associated with its Gas Appliance Division.

At Springfield, Mr. Long will have unparalleled opportunities for engineering and development work in connection with American-Bosch KOMPAK Water Heaters. At his command are the research and plant facilities, the technical background of nearly half a century, that have made American-Bosch famous as manufacturers of such technical products as magnetos, spark plugs, coils, radio, etc., etc.

With such a union of engineering experience, the gas water heating industry may look to American-Bosch and Kompak as a source of leadership in the invention and manufacture of dependable water heating equipment products.

GAS APPLIANCE DIVISION,
UNITED AMERICAN BOSCH CORPORATION
SPRINGFIELD, MASS.

NEWS of the GAS INDUSTRY

New Jersey Assn. Holds Annual Convention

E. J. Menerey, president of the Peoples Gas Company, was elected president of the New Jersey Gas Association, at the twenty-third annual convention of the Association, in Trenton, March 22. Herbert E. Cliff, of Public Service

E. J. Menerey

Electric and Gas Company, was elected first vice-president of the Association; William S. Potter, treasurer of the Elizabethtown Consolidated Gas Company, was elected second vice-president, and George Webber, Public Service Electric and Gas Company, was re-elected secretary-treasurer.

Frederick A. Lydecker, of Public Service Electric and Gas Company, who has been president of the association during the past year, presided at the meeting which was attended by more than four hundred members.

Judge Herbert O. Caster, president of the American Gas Association; Percy S. Young, Vice-President of Public Service Corporation of New Jersey, and Alexander Forward, managing director of the American Gas Association, who introduced Judge Caster, were among the speakers who addressed the meeting.

Judge Caster, choosing for his topic, "The Position of the Gas Industry in the National Scene," described the work done by the American Gas Association in respect to N.R.A. codes for the manufacturer and natural gas industries. He declared that the industry was making every effort to assist the Administration in promoting economic recovery billion cubic feet of gas were sold for and announced that a final hearing on the industry's code would be held in Washington on April 11.

Vice-President Percy S. Young greeted the members of the Association and praised its activities for helping to give "a more complete service to the gas consumer."

Other speakers on the program were: Preston D. Gardner, recently appointed Southern Division Agent for Public Service Electric and Gas Company, who discussed the topic, "Put the Idle Equipment to Work", F. A. Engle, of Elizabethtown Gas Company, who discussed "Flues, Chimneys, Venting"; C. George Segeler, of the American Association, who talked on "The New Deal in Water Heaters"; R. L. Hallock, of Brooklyn Union Gas Company, who discussed "Experiences With and Sales Possibilities of the Electrolux," and R. F. Cleary, of the Homestead Health Company, who spoke on the subject, "Where's the Space Heater?"

Four employes of Public Service Electric and Gas Company, the Misses Jane Wilmot, Ruth Edwards, Harry Radley and A. Haines Kline, acted a playlet, "The Old and the New Kitchen," written and directed by the Public Service Home Economics Department. The playlet was received with much applause by the audience.

William McCabe, of Public Service Electric and Gas Company, entertained the audience with an excellent program of Scotch songs.

E. J. Menerey, president of the Peoples Gas Company, who was elected president of the New Jersey Gas Association, lives at 301 Highland Terrace, Pitman. He has been associated with the gas industry since 1916 following his graduation from Michigan State College. His first position was with the Lansing (Michigan) Gas Company. He later served as superintendent of production for gas companies in Freeport, Illinois and Wilmington, Delaware. In 1928 he was made manager of the Peoples Gas Company and in 1930 became president. Mr. Menerey is a member of the Glassboro Rotary Club and Pitman Country Club.

More Than One Billion Cubic Feet of Gas for Building Heating

There was a net gain of forty-six installations of gas-fired boilers for building heating during last year, the 1933 Annual Report of Public Service Corporation of New Jersey reveals. This brings the number of installations connected to the company's mains up to 2,479. During the year more than one building heating.

Home-Study Course in Air Conditioning at Rutgers

An impression of the gains made in the science of air conditioning is to be obtained from a study of the educational side of the industry, where next year's scientists are in the making. At Rutgers University in New Brunswick, N. J., the University Extension Division, which sponsors one of the most practical courses in the field, reports students from thirty-six states and five foreign countries registered in home-study work in air conditioning. Australia, Russia, France, China, and Canada are the nations represented.

Worthy of comment is the fact that the majority of students in the course are employees of public utility companies. The students range in rank from executives seeking to remain abreast of changing conditions and improvements, to factory mechanics eager to learn the science of their craft. Nevertheless the group has been able to maintain an average performance rating of slightly more than 90 per cent.

Ask Election on Municipal Ownership

Petitions are being circulated at Noblesville, Ind., with a view of asking the City Council to call an election on the question of municipal ownership of gas and electric utilities. The matter is being pushed with a view of holding the election on May 8, the regular Indiana primary day, thus curtailing the expenses of a special election. Noblesville citizens have been considering municipal ownership for some years, but this is first definite step taken. The gas and electric service is rendered by the Northern Indiana Power Company, an Insull subsidiary.

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Don't Miss the 75th ANNIVERSARY NUMBER of the AMERICAN GAS JOURNAL

1859 – 1934

THE May Issue, which will commemorate the seventy-fifth anniversary of the American Gas Journal will be outstanding in every respect.

It will present a most complete and interesting chronicle of the progress of all phases of the gas industry written by well known authorities.

Gas executives in all parts of the country are cooperating to make this anniversary number replete with historic information and interesting photographs.

The May issue will be of particular interest and value not only for current reading, but as a reference volume as well. The edition will be limited. Order Your Personal Subscription Now.

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Major Strickler's Candidacy Well Received

The candidacy of Major T. J. Strickler, vice-president and general manager of the Kansas City Gas Company, for Director of the Chamber of Commerce of the United States to represent the Seventh Election District, has been exceptionally well received throughout the entire country. The Chamber of Commerce at Kansas City is distributing a campaign folder which contains the endorsements of approximately 500 organizations that are members of the United States Chamber of Commerce. Since the folder went to press, March 12, more than 75 additional endorsements have been received, and by election time the endorsements are expected to exceed 600, which promises to be a record for endorsements received by one candidate. Major Strickler's candidacy is being actively promoted by the leading national associations and outstanding communities of the forty-eight states of the United States.

The American Gas Association has been extremely active in behalf of Major Strickler's candidacy. A substantial number of the endorsements received to date is due to the splendid cooperation of its members throughout the United States.

Those who are campaigning in behalf of Major Strickler urge that all gas company executives contact their local Chambers of Commerce and secure the vote of the National Councillor for Major Strickler. The voting of the councillors will be held May first in Washington, D. C.

In addition to the effective work that the members of the American Gas Association and the Chamber of Commerce of Kansas City are doing to secure commitments of national councillors, more than 100 of the leading business men of Kansas City are writing their national trade associations and kindred organizations in behalf of Major Strickler's candidacy.

To date a substantial number of national councillors who plan on being present in Washington have pledged their support. The securing of these pledged votes is the most important part of the campaign, and continued cooperation is urged in this respect.

Convention Calendar

April

16-18 Mid-West Gas Association, Sioux City, Iowa.
19-20 Missouri Association of Public Utilities, The Elms Hotel, Excelsior Springs, Mo.
24-26 Southwestern Gas Measurement Short Course, College of Engineering, University of Oklahoma, Norman, Okla.

May

1- 4 U. S. Chamber of Commerce, Washington, D. C.
9-10 Pennsylvania Gas Association, Wernersville, Pa.
14-18 National Fire Protection Association, Atlantic City, N. J.
21-22 A.G.A. Joint Committee Conference of Production and Chemical Committees, Hotel New Yorker, New York, N. Y.

June

4- 5 Canadian Gas Association, Montreal, Can.
5- 8 The Institution of Gas Engineers, London, England.
18-21 National Association of Purchasing Agents, Cleveland, Ohio.

September

1 -4 International Gas Association, Zurich, Switzerland.

October

Week of 29th—American Gas Association Convention and Exhibition, Atlantic City, N. J.

Gas Company's Annual Report

The annual report of the Coast Counties Gas & Electric Company, for the year of 1933 shows net income for 1933 was $314,119, as compared with $325,204 in 1932. The income is equal to $8.38 per share on its first preferred stock against $8.68 in 1932. All of its common and second preferred stock is owned by the Pacific Public Service Company. Operating revenues declined from $2,282,870 in 1932 to $2,212,813 in 1933. Its expenses were 4.68 per cent less during 1933 or a decrease of $65,791, and after giving effect to increased taxes, other than federal income tax, amounting to $41,268, the actual decrease in operating expenses was $107,059. Current assets at the close of 1933 were $483,146; current liabilities $306,085. Cash on hand was $66,941 greater than at the close of the year of 1932. Its electric business was off about 7.64 per cent while its gas business increased 4.59 per cent. During 1933 it gained 1,055 gas customers.

Pennsylvania Ass'n. Plans for Fine Meeting

More than 300 members of the Pennsylvania Gas Association are expected to attend the association's annual convention on May 8, 9 and 10, at Galen Hall, Wernersville, Pa. Present plans indicate that the program will include papers and discussions on the outstanding problems of the industry. Among these will be kitchen planning, gas refrigeration, problems in the automatic gas water heater field, home service—its use for promotion and good will building, employee training, and accounting problems. Speakers for both day and evening sessions will be drawn from among the best within and without the industry.

Ample entertainment will be provided to round out a very attractive program.

THE STACEY-KLONNE HOLDER

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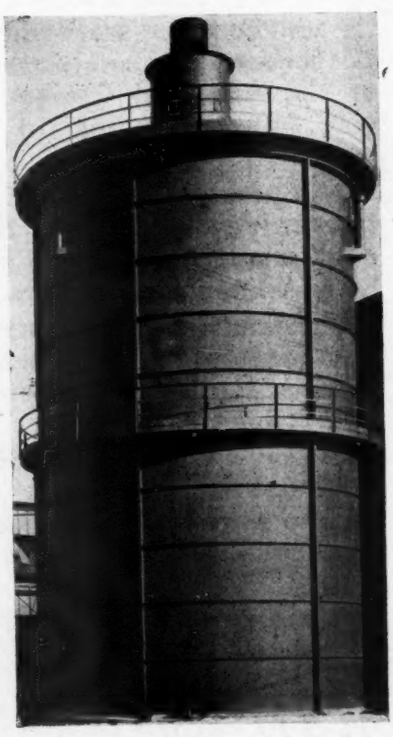
To Maintain and To Operate

In All Capacities



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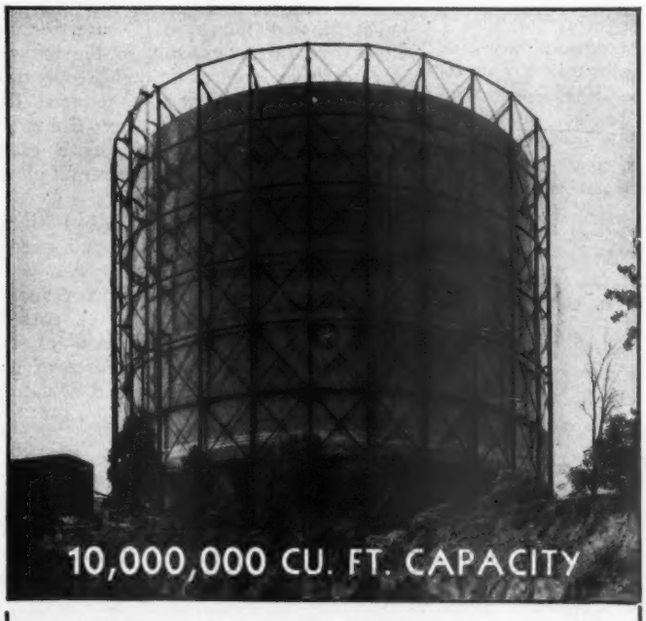

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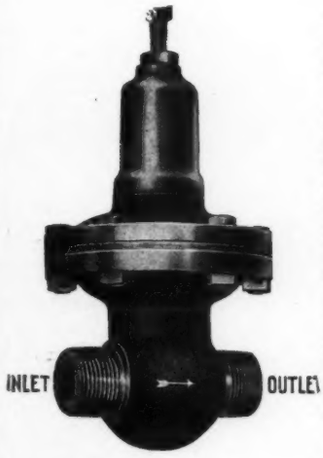
Little Hercules Regulator Controls High Pressures



EXTREME high pressures, up to 1,000 pounds, can be reduced to anything between 5 and 100 pounds as desired, by use of the Little Hercules Regulator. And the Little Hercules weighs only 8 pounds. It is designed for use in conjunction with the Fulton House Regulator since engineers do not favor carrying high gas pressures to the point of distribution with only one valve to control them. The Little Hercules is also adapted for use wherever a small spring-type relief valve is needed.

Chaplin-Fulton equipment for all forms of pressure control has been known and commended for forty years. Literature on request.

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Hearing on Manufactured Gas Code

A public hearing on a proposed code of fair competition for the Manufactured Gas Industry has been set for Wednesday, April 11, at 10 a. m., in the Sun Parlor of the Washington Hotel. Deputy Administrator L. H. Peebles will preside.

The code asks a basic 40-hour week with exceptions in emergencies. Night watchmen, outside salesmen, and other employees whose hours should be longer in the opinion of the proponents are also excepted in the proposed code.

Operating employees paid on a weekly or monthly basis shall receive not less than $16 per week under the code. For other employees, except learners in all departments, the pay is set at $15 per week. In the South the pay must not be more than $1 per week less. Employees paid on the hourly basis would receive 40 cents per hour.

Gas Rates Cut

Rate slashes for gas consumers, varying from 20 to 31.2 per cent and affecting Chattanooga, Cleveland and Fayetteville, Tenn., are in effect following approval of a schedule offered by the Chattanooga Gas Co., Chattanooga, Tenn., and accepted by the Tennessee Railroad and Public Utilities commission.

The reductions, made retroactive to March 21, will save 7,500 Chattanooga users of artificial gas an estimated $71,000 annually.

The new rates follow:

First 200 cubic feet $1, minimum charge, next 1,800 cubic feet 10 cents per 100 cubic feet, next 6,000 cubic feet, nine cents a 100; next 992,000 cubic feet, 7½ cents per 100; next 2,000,000 cubic feet, six cents per 100; next 3,000,000 cubic feet, five cents per 100.

The rates are figured as net, with the gross rates 10 per cent higher in case bills are not paid within 10 days after rendition.

Greenwich, Conn., to Have New Gas Rates

The Greenwich Gas Co., Greenwich, Conn., will put into effect on March 15 a new schedule of reduced rates for gas for automatic water heating and home or building heating in the town of Greenwich.

This rate is available for domestic use in houses or apartments using automatic gas water heaters and/or houses or buildings having gas-fired heating installations. The new schedule is as follows:

First 100 cu. ft. per month at 80c.
Next 400 cu. ft. per month at 30c. per 100 cu. ft.
Next 2,500 cu. ft. per month at 15c. per 100 cu. ft.
Next 15,000 cu. ft. per month at 10c. per 100 cu. ft.
Next 32,000 cu. ft. per month at 8c. per 100 cu. ft.
All over 50,000 cu. ft. per month at 7c. per 100 cu. ft.

The minimum bill will be one dollar a month. When home or building heating is used the minimum bill will be $10 per month during the heating season of seven months and one dollar per month for the remaining five months.

Seasonal or short-term consumers falling within the classifications permitted under this rate will be supplied at this rate plus a $3 charge to be added on the first month's bill.

In the event that the cost of gas to the company is increased because of the increased cost of coal and oil used in gas manufacture, the above charges will be increased by a like amount.

Los Angeles G. & E. Corp. Passes 1934 Budget

Calling for total expenditures in 1934 of $13,105,000, exclusive of bond interest and dividends, the operating budget of the Los Angeles Gas & Electric Corp., has just been approved by Addison B. Day, president and general manager.

Operating and maintenance payrolls of the gas and electric departments, estimated at approximately $4,000,000 constitute a major item in the budget. The payroll in the lower wage brackets of the operating force reflects increases due to upward wage adjustments following the adoption of the NRA code, whereas in all of the higher levels reduced salaries are in effect, it was stated.

Expenditures for gas and electric plant construction, covering materials, equipment and construction payrolls, together with the major plant operating costs amount to $5,855,000. Miscellaneous supplies to be purchased from local dealers for operating and maintenance purposes, aside from general construction work are estimated at $400,000.

The tax figures for the year 1934 is estimated at $2,850,000. With the recent enactment of the Federal tax on electricity private utilities in California are now paying in taxes 15 cents out of every gross dollar received from customers; on gas sales the average total tax exceeds 12½ cents per dollar of gross revenue.

Wichita Gas Company Now Serving Power Plant

The Wichita Gas Company, Wichita, Kans., on March 3 connected to its lines the power plant of the Kansas Gas & Electric Company at Wichita. This is an additional load of between 3½ and 4 million cubic feet of gas per day.

A Good Gas Well

The Mountain Fuel Supply Company brought in a gas well, late in November, in the Bartram Dome gas field, Moffat county, Colorado, flowing seven million cubic feet daily. It is within a short distance of the pipe line that will convey the gas to market.

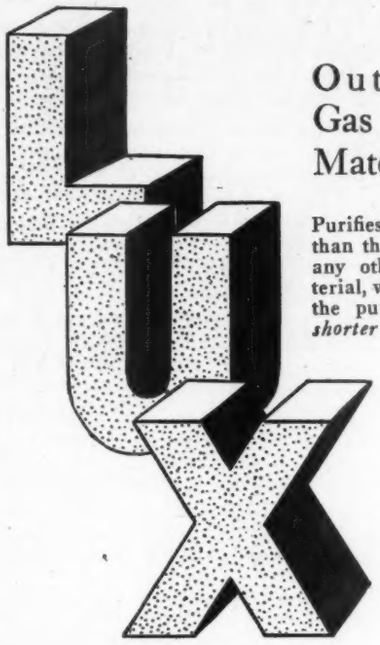
Columbia Plans for Better Business

At a recent meeting of executives of the Columbia Gas and Electric Corporation, together with sales managers and other representatives of various groups in this system, matters pertaining to increasing sales for natural gas during 1934 were discussed over a two-day period in Dayton. About fifty persons were in attendance from Binghamton, N. Y.; Charleston, W. Va.; Columbia, Ohio; Pittsburgh, Pa.; Stanton, Va., and Dayton, Ohio. These men represented the different operating groups of the Columbia System.

The reports received by the meeting indicated that the time is here for an aggressive sales campaign in the natural gas territory where Columbia operates. The meeting was one of the most enthusiastic ever held by any Columbia group and resulted in infusing a great deal of "punch" into sales efforts all along the line.

Reports bearing upon 1934 business were extremely encouraging and executives of the Columbia System who were present from New York City were unanimous in their feeling that the current year promises every indication of increased sales and many new uses of natural gas for both domestic and industrial purposes.

Executives and Sales Managers at Meeting of Columbia Gas & Electric.



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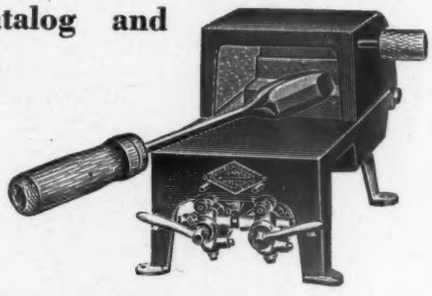
JOHNSON No. 101 BENCH FURNACE

In shops throughout the country, the Johnson No. 101 is known for its efficiency and dependability. A quality furnace built to give years of good service at low cost. Write for complete catalog and price list.



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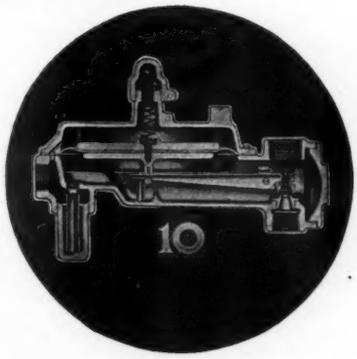
Three things that are outstanding in Reynolds Service Regulators, are: Accurate control of pressure delivery even though inlet pressure and volume vary; quick response to changing load demands without disturbance of pressure and volume requirements; long life measured in periods of 20, 40 or more years. Each one of the Service Regulators is built to fit a specific requirement and like all Reynolds Products, they are precision built of quality materials.

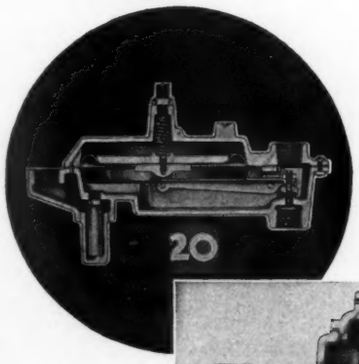
Write for detailed information. Use Reynolds offer of co-operation in working out your Gas Control problems.



Model 10–all parts accessible and interchangeable while in pipe line.

Model 20 – working parts so accurate as to permit complete interchangeability in shop.

Model 30–is manufactured in either spring or dead weight adjustment for horizontal or vertical connections.



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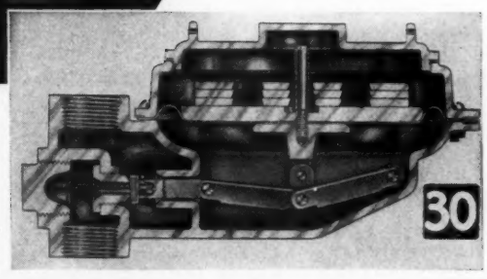

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GAS CONTROL SINCE 1892

Personals

Norman E. Drexler, who for the past six years has been Eastern Division Manager of the Virginia Public Service Co., Newport News, Va., has been elected a vice-president of that company. He is also president of the Citizens Rapid Transit Corp., and the Hampton Towing Co., subsidiaries of the Virginia Public Service Co., and vice-president of the Hampton and Langley Field Railway Co.

After graduation from the Rensselaer Polytechnic Institute in 1912, as civil engineer, Mr. Drexler entered the utility field as an assistant in the engineering department of the Newport News & Old Point Railway & Electric Company at Hampton, Va. In 1916 he was made chief engineer of the Newport News & Hampton Railway, Gas & Electric Co., successor to the Newport News & Old Point Railway & Electric Co. In 1925 he was made manager of the Gas and Electric Departments of this company.

Mr. Drexler has taken an active part in civic and community affairs. He is a member of the board of directors of the Morris Plan Bank of Newport News and of the Hampton Roads Port Development Committee of the State Chamber of Commerce. He is a past president of the Newport News Chamber of Commerce and a past president of the Virginia Ice Manufacturers' Association.

Wayne L. Hutcheson, former new business clerk in the general office of The Gas Service Company in Kansas City, has recently been put in charge of sales for the Pittsburgh group of the Columbia System at Pittsburgh, Pa. Mr. Hutcheson resigned from The Gas Service Company in 1928 and accepted a position with the Columbia Engineering and Management Corporation at Columbus, Ohio, as chief clerk in the new business department. Mr. Hutcheson's new position is a fine promotion for him.

Before being connected with The Gas Service Company general office, Mr. Hutcheson was employed in the new business department of The Capital Gas and Electric Co. at Topeka. For a short time after he was in the headquarters office he worked as a member of the new business department of the Wichita Gas Co.

J. S. Spaulding, formerly with McCann-Erickson Advertising Agency in Los Angeles, Calif., has been appointed advertising manager for Los Angeles Gas & Electric Corp. Mr. Spaulding was formerly in charge of joint advertising copy for the three Southern California utilities—South California Gas Co., Southern Counties Gas Co., and Los Angeles Gas and Electric Corp.

George B. Cortelyou completed twenty-five years of continuous service with the Consolidated Gas Company of New York on March 25th. He joined the company as president on March 25, 1909, two weeks after he retired as Secretary of the Treasury in President Theodore Roosevelt's cabinet.

Mr. Cortelyou arrived at his office on the morning of the 26th to find his desk covered with flowers. Special groups of employees, representing the companies affiliated with the Consolidated Gas Company and the various employee organizations of the companies, visited him during the morning to congratulate him and present resolutions.

In completing twenty-five years of continuous service, Mr. Cortelyou becomes eligible for membership in the company's Quarter Century Club, an employee organization which at present has more than two thousand members.

The evening of the 26th he was the guest of honor at a dinner given at the Union Club by the trustees and officers of the companies.

Mr. Cortelyou came to New York as president of the Consolidated Gas Company after a long and eventful career in Washington. He has the distinction of being the only person to have served in three cabinet positions, and he was also the personal friend and associate of three United States Presidents.

His Washington career started in 1891, when he became private secretary to the Fourth Assistant Postmaster General. In November, 1895, he was transferred to the Executive Mansion as stenographer to President Cleveland, and three months later he was made executive clerk to the President.

When Mr. Cortelyou was offered the position with President Cleveland, he thanked the President for the opportunity and said: "I don't want to come under false pretenses. I am a Republican." President Cleveland replied: "I don't care about your politics in a confidential capacity. I want you to come."

In 1898 Mr. Cortelyou became an assistant secretary to President McKinley, and in 1900 he was appointed secretary to the President.

Mr. Cortelyou was with McKinley in Buffalo when the President was shot down by an assassin. Upon Mr. Cortelyou devolved general direction of the arrangements attending the illness, death, and burial of the President.

The anniversary of President McKinley's birth, January 29, is observed each year by Mr. Cortelyou, who sends to officers and department heads of the utility company a red carnation, President McKinley's favorite flower.

Mr. Cortelyou continued as secretary to the President under Roosevelt until 1903, when he entered the cabinet as the first Secretary of the newly created Department of Commerce and Labor. He organized the department and mapped out the lines along which it has since developed.

He resigned in June, 1904, to become chairman of the National Republican Committee, in which capacity he conducted the campaign which resulted in the election of President Roosevelt.

Mr. Cortelyou entered the new cabinet in March, 1905, as Postmaster General and served until March, 1907, when he was advanced to the post of Secretary of the Treasury. He served in this position until the end of the Roosevelt administration, including the panic period of 1907.

In 1918 Mr. Cortelyou became the first president of the American Gas Association, serving two terms. He was elected president of the National Electric Light Association in 1932, and continued as

Honoring Geo. B. Cortelyou, President of the Consolidated Gas Company of New York, upon the completion of twenty-five years of continuous service with the company. Officers of the company in Mr. Cortelyou's office, Monday, March 26, 1934, from left to right: F. H. Nickerson, Vice-President; Oscar H. Fogg, Vice-President; Floyd L. Carlisle, Chairman of the Board; Mr. Cortelyou; W. Cullen Morris, Vice-President; John Stilwell, Vice-President; and H. M. Brundage, Vice-President.

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High Total Sulphur Absorption at Minimum Cost. Intensely Active.

"THE EFFICIENT PURIFIER"

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Engineers and Contractors for Complete Gas Works

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"STEAM NOT AN EQUIVALENT FOR INERT GAS"

Harrison Purging Machines meet one of the fundamental requirements outlined by the A. G. A. in a recently published report covering purging procedure, namely: "An adequate supply of inert gas." This report further says: "Steam is not an equivalent for inert gas." The attitude evidenced was clearly that now that inert gas units are commercially available, all works equipment containing flammable gas should be purged when removed from, or placed in, service. Write for Bulletin 100-B10.

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Oil Gas Plants — "Refractory Screen" Process for Base — Standby or Peak Loads — On Existing or New Water Gas Sets Low or High B. T. U. Gas

president when this association reorganized into the Edison Electric Institute. He has the distinction of being the only person to serve as president of these two large associations.

One interesting incident in Mr. Cortelyou's Washington life which is not generally known occurred in January, 1899. A greatly perturbed New York banker, James Speyer, went to President McKinley to explain that the historic agreement between the Central Pacific Railroad and the United States Government for the settlement of the road's debts had been released both here and in Europe for publication the following day, but that the necessary signature of Attorney General Griggs was unobtainable as he was absent from Washington on a speech-making tour. President McKinley pressed a button. A young secretary entered.

"Get this to the Attorney General, wherever he is, and have him sign it today," commanded the President.

"Yes, sir," replied the young man.

"But," interjected the banker, "how can I be sure that the Attorney General will have signed it before tomorrow morning?"

"Didn't you see me give it to Mr. Cortelyou?" asked the President, somewhat testily, as he dismissed the matter.

Mr. Cortelyou has often said that he secured his start in life through stenography, and he has at various times referred to stenography as the "hand maid of opportunity."

Mr. Cortelyou was born in New York City on July 26, 1862. After passing through the public schools, he attended Nazareth Hall Military Academy, at Nazareth, Pa. He graduated from the Hempstead, Long Island, Institute in 1879, and from the State Normal School, Westfield, Mass., in 1882.

He entered the New England Conservatory of Music at Boston, and also studied under Dr. Louis Maas, former conductor of the Philharmonic Society of Boston. He continued his study of music in New York during 1884 and 1885 and also attended Walworth's Stenographic Institute. He entered the government service in 1884 in the office of the Appraiser of the Port of New York. He was later a general law reporter, and the principal of a private school.

His association with the Post Office Department started in 1889 when he became private secretary to the post office inspector in charge at New York City. He was later a confidential stenographer to the surveyor of the Port of New York.

Mr. Cortelyou was married on September 15, 1888, to Lily Morris Hinds. Five children were born to them: George B. Cortelyou, Jr., William Winthrop Cortelyou, Helen Cortelyou (deceased), Mrs. Jacob F. Weintz (Grace Cortelyou), and Peter Crolius Cortelyou.

During the twenty-five years in which Mr. Cortelyou has served as president of the Consolidated Gas Company of New York, it has grown from a company with 11,243 employees to a group of affiliated enterprises employing 45,840.

Prof. Neil P. Bailey of the mechanical engineering staff at the University of North Carolina, Chapel Hill, N. C., has been appointed head and professor of the Mechanical Engineering Department at Iowa State College, Ames, Iowa. Professor Bailey, 33 years old, is the youngest department head ever appointed at Iowa State College.

During nine years of teaching and research, Professor Bailey has specialized in thermodynamics and heat flow, and aerodynamics and fluid mechanics. He is to replace Prof. Warren H. Meeker, who will retire as head of the Mechanical Engineering Department at Iowa State College during this summer, but will continue as a full professor.

Guy W. Faller was recently appointed vice-president and general manager of the Public Service Company of Colorado, important Cities Service Co. subsidiary. Mr. Faller, a veteran of the Public Service organization, succeeds the late Clare N. Stannard who died recently.

He has been with the Doherty organization for thirty-two years and for more than half that time has been in Denver.

Mr. Faller graduated from the United States Naval Academy in 1898 and served aboard the U.S.S. Texas during the Spanish-American war. He was sent to the Philippines on the U.S.S. Oregon and served in the Insurrection and in the Boxer Rebellion.

He entered the employ of the Madison Gas & Electric Co. in Madison, Wis., one of the first Doherty companies, in 1902 as engineer and electrical operator of the steam plant. He became superintendent of the Madison plant in 1903.

In 1905 Mr. Faller went to Denver as engineer of gas distribution for the old Denver Gas & Electric Co. Five years later he was named assistant superintendent of the company with supervision over the gas and steam heat department.

Mr. Faller was transferred to the superintendency of the City Light and Water Co. and the Amarillo Street Railway Co. of Amarillo, Texas, in January, 1913. Two years later he was named vice-president and general manager of the company.

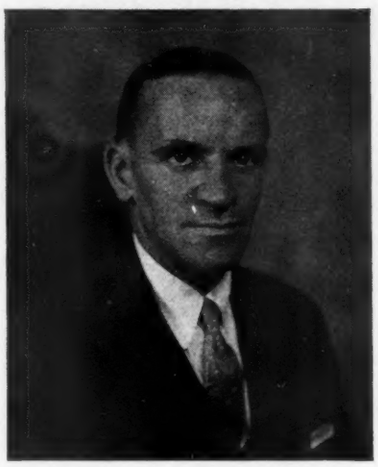
In 1923 he returned to Denver as assistant manager and was made director of the cadet engineering training school. In 1924 he was named a vice-president and director of the Public Service Company of Colorado and given charge of outside properties, the budget and publicity departments as well as being actively in charge of the cadet school. In 1930 he was made manager of the Henry L. Doherty & Co. securities department in charge of the Colorado office with headquarters in Denver.

The announcement of Mr. Faller's appointment came after W. A. Jones, first vice-president of the Cities Service Company, R. E. Berger, vice-president of the Cities Service Power & Light Co., and George H. Shaw, general counsel for the Doherty companies in the Denver territory, arrived in Denver.

Obituary

CHARLES J. O'DONNELL

The many friends of Charles J. O'Donnell, sales engineer of The U. G. I. Contracting Company Division of United Engineers & Constructors, Inc., Philadelphia, Pa., were shocked to learn of his sudden death on the night of March 20, 1934, at his home, 6408 North Park Avenue, Oak Lane, Philadelphia, Pa. He suffered a sudden heart attack.



His widow, one son, John A., and two daughters, Jean A. and Phyllis F., survive him. Funeral services held on March 24 were attended by a large number of his former associates and other friends.

Mr. O'Donnell, known affectionately throughout the gas industry as "Charlie," was in the employ of The United Gas Improvement Company and affiliated companies for thirty-five years, entering in June, 1899, after having attended North East Manual Training School and the Drexel Institute, Philadelphia. Until 1908 he was with The Philadelphia Gas Works Company as photometer reader, assistant chemist and cadet engineer, engaged in the operation of the plant and laboratories.

Then followed short periods with the Minneapolis Gas Light Co., The U. G. I. Co. at Philadelphia, the Peoples Gas Light Company at Manchester, N. H., in general operation of plants. While at Manchester, Mr. O'Donnell operated the first U. G. I. vertical retort coal gas plant installed in this country.

From 1911 to 1917 he was Assistant in the Department of Test and Research, covering development and operation of new plants and processes, particularly Vertical Retort Settings, Waste Heat Boilers, etc.

For three years he was on the staff of the General Superintendent of The U.G.I. Co. rendering expert assistance in the operation of plants in many parts of the country.

From 1930 to the time of his death he was Sales Engineer of The U.G.I. Contracting Company Division of United Engineers & Constructors, Inc.

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TRADE NEWS

Appalachian Coals, Inc. Issue List of Mines and Sub-Agents

In the annual report of Appalachian Coals, Inc., Cincinnati, O., they state that the company are Sales Agents for 146 coal mining companies, operating 250 mines. It has 130 sub-agents selling the coal of the producers. It maintains a sales committee composed of men of wide experience in the coal industry, who classify the various coals, based upon the suitability of the coals for particular uses. The company has prepared a printed list of names of mining companies and sub-agents with addresses.

W. M. Chace Valve Company Publishes New Book About Thermostatic Bimetal

An interesting book about a comparatively little known subject—Thermostatic Bimetal—has just been released for distribution by the W. M. Chace Valve Co.

This new Chace book about Thermostatic Bimetal is profusely illustrated with photographs, diagrams, sketches, etc. The subject is treated in easily understandable language.

The story of the development of Thermostatic Bimetal begins with the first discovery of its principle, and then traces the gradual progress down through the years to the present state of perfection.

The new book "Thermostatic Bimetal" is the most complete of its kind published to date. Those interested may obtain a copy by writing the W. M. Chace Valve Co., 1610 Beard Ave., Detroit, Michigan.

"West's Gas" Article Competition

The West Gas Improvement Co., Ltd., London, England, publish a monthly house organ, "West's Gas," many copies of which are circulated in the United States and Canada through the West Gas Improvement Co. of New York. They announce that for their Summer number they will offer prizes for the best articles on Coke, Technical Control of Gasworks, Industrial Gas, Gas in the Home and Tar. The prize for the best article is $100.00, and to the second best $50.00. All entries must reach West Gas Improvement Co., 441 Lexington Ave., New York, not later than June 10th.

Rules of the competition are:

1. Competing articles must be typewritten on one side of foolscap paper, in English.

2. Articles must not exceed 4,000 words in length; from 3,000 to 4,000 is regarded as a convenient length.

3. Each competing article must be confined to the heading under which it is offered, but any one competitor may submit articles under all or any of the headings.

4. Competing articles must not bear any name or mark by which the competitor can be identified.

5. The competing article must be enclosed with a covering letter, giving the name and address of the competitor, and the titles and heading numbers of the articles submitted.

Servel, Inc., Makes Changes in Personnel

Important changes and additions to the executive personnel of Servel, Inc., and its sales subsidiary, Electrolux Refrigerator Sales, Inc., are announced by Axel Wenner-Gren, Chairman of the Board. Louis Ruthenburg has been elected President and H. A. Strong, Vice-President of both companies. F. E. Sellman was re-elected Vice-President of the sales company and Robert L. Hallock was appointed assistant to the Executive Vice-Pres.

A first-hand picture of the company's attitude toward the gas utility companies is found in a statement of policy which Chairman Wenner-Gren made to his Board of Directors at the last meeting. The statement is considered an interesting line on the sales and business philosophy of the man, Wenner-Gren, who has grown from a salesman to a leading international industrialist through creative enterprise. The statement in full is as follows:

"Gentlemen, we have not only a responsibility but an unusual opportunity. The name Electrolux has come to stand for leadership in household service through the world, and I have striven through every available avenue opened by the skill and genius of capable men to make the product worthy of the name and the ideal. In most of those markets we now have unchallenged leadership and with such a product as we here offer to the fine homes of America, we must see our opportunity and accept our duty intelligently and actively.

"To offer a good product is not the sum of a manufacturer's obligations. The merits of the product must be shown convincingly and in the right manner. People are preoccupied with the manifold interests of daily life, and voluntary examination into the true qualities of a household device is seldom made. This condition is taken advantage of by those who loudly proclaim surface appearances and novelties, whereas fundamentals should be considered, first of all—and, therefore, we must work thoroughly.

"I have learned that it is a great public service to educate and interest competent sales people to correctly guide the thought and persuade the decision of a prospective purchaser toward the most intelligent course for human betterment. Such opportunity is in the hands of the management of our company, and we have associated with us other important

Axel Wenner-Gren

managements whose interests are blended with ours and with whom we have the privilege of cooperating to our mutual and vital advantages.

"To an experienced man it is clear that no product could have a more natural outlet or a more limitless opportunity than the Electrolux Refrigerator will find through the facilities of the gas companies whose investments touch each other town to town and city to city throughout this land, if those facilities are invited by intelligent approach and plans in the first place, and by experienced, practical and industrious contact in the maintenance of relationships to mutual benefit and profit. In their load building the gas companies need Electrolux, and for its most natural sales, installation and service channels, Electrolux needs the gas companies. However, those needs alone do not create sales in satisfactory measure either to the gas companies or to our company. Obviously, there must be *sales* activities on their part and on ours; and I want to point out that we must more fully discharge our responsibility in this respect. We must supply the kind and the amount of practical cooperating which will be most helpful in converting these opportunities into sales—profitable to the gas companies and ourselves. I cannot stress too strongly that all such proposed service shall be thoroughly practical, and that is the reason I have brought into our management men of such broad and successful experience in this particular type of merchandising. There is ample reason for the good reputations these men have for ability and sound judgment; and they likewise are men of such zeal that I am sure that in the businesslike promotion of our own business it will be found that we have made a genuine contribution to the interests of the gas industry."